Nash

TECHNICAL SERVICE MANUAL 1949

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TECHNICAL SERVICE MANUAL

For the 1949 "600" and "AMBASSADOR 6" SERIES

DIVISION OF NASH-KELVINATOR CORP.
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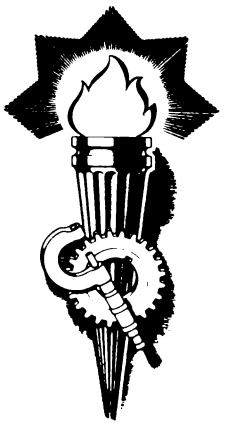
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ENGINE SECTION

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ENGINE IDENTIFICATION

1949 "600" Series

The engine number is stamped on a machined surface located on the right side of the engine block just above the exhaust pipe.

1949 "Ambassador 6" Series

On this series, the engine number is located on the upper right hand corner of the engine block.

LETTER IDENTIFICATION, SIZE OF BORE, MAIN BEARINGS AND CONNECTING ROD BEARINGS

1949 "600" and "Ambassador 6" Series

In the machining of cylinder blocks and crankshafts, it is sometimes necessary to machine the cylinder bores to .010 inch oversize, and the crankshaft main bearing journals or crank pins to .010 inch undersize.

These engines are marked with a three-letter code. This code is stamped adjacent to the engine number. The letters are decoded as follows:

First Letter—Size of the Bore

Second Letter—Size of the Main Bearings

Third Letter—Size of the Connecting Rod Bearings

Letter "A"—Standard

Letter "B"—.010" Undersize

Letter "C"—.010" Oversize

Engines that are not marked are standard in all respects.

CYLINDER HEAD AND GASKET

1949 "600" and "Ambassador 6" Series

Whenever a cylinder head is removed, inspect the studs to make sure that they are tight in the engine block. If the studs are removed, they should be sealed with compound upon replacement.

After thoroughly cleaning the top surface of the block and the bottom surface of the cylinder head, inspect them to see that they are flat and smooth.

Now coat the gasket with Nash non-hardening gasket paste and install over the studs. Care should be used when placing the gasket over the studs to see that the threads of the studs do not damage the gasket.

After the cylinder head has been installed the stud nuts should be tightened down in a uniform manner, following the sequence shown in Figures 1 and 2. Use a torque wrench to tighten the cylinder head stud nuts. On the "600" Series the cylinder head stud nuts should be drawn up with 60 to 65 foot-pounds of torque. On the "Ambassador 6" Series the stud nuts are drawn up to 65 to 70 foot-pounds of torque.

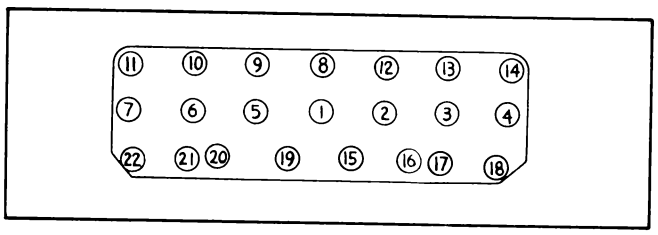


Figure 1—"600" Series Cylinder Head Stud Nut Tightening Sequence—60 to 65 Foot-Pounds of Torque.

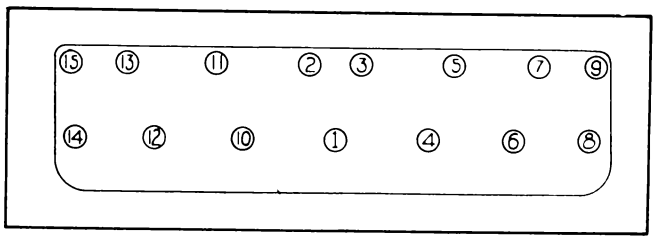


Figure 2—"Ambassador 6" Series Cylinder Head Stud Nut Tightening Sequence—65 to 70 Foot-Pounds of Torque.

VALVES AND VALVE TIMING

1949 "600" and "Ambassador 6" Series

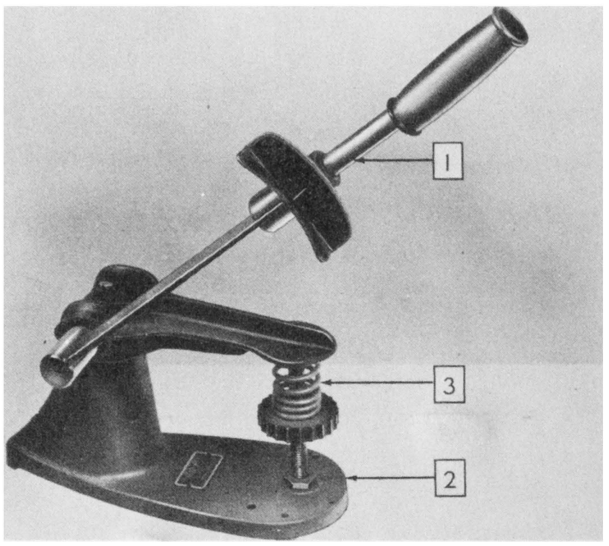
Valve Springs

Whenever valve springs are removed, they should be tested according to the specifications below,

using a valve spring tester as shown in Figure 3. Any spring not within the specifications should be replaced.

VALVE SPRING SPECIFICATIONS

	"600" Series	"Ambassador 6" Series
Valve Spring Free Height	$2\frac{3}{32}$"	$2\frac{3}{32}$"
Valve Spring Pressure		
Valve Open	80-86# @ $1\frac{7}{16}$"	146# @ $1\frac{11}{32}$"
Valve Closed	37-41# @ $1\frac{3}{4}$"	53# @ $1\frac{11}{16}$"



1. Torque wrench
2. Valve spring tester
3. Valve spring

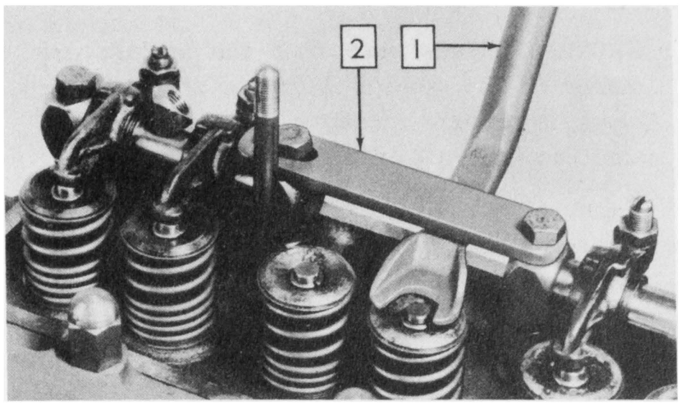
Figure 3—Valve Spring Tester.

1949 "Ambassador 6" Series

It is not necessary to remove the cylinder head in order to remove a valve spring on this series engine. First remove the spark plug from the cylinder that requires a valve spring replacement and insert a 14 mm. thread-size adapter.

NOTE: *This adapter can be made from the body of a spark plug from which the porcelain has been removed, and an air hose connection threaded into the body of the spark plug.*

Maintain air pressure above 90 lbs. in the cylinder while the valve spring is being removed. The air pressure will hold the valves against their seats so that the valve lock and the upper retainer can be removed. To hold the valve spring down while the parts are removed, use a pry bar as shown in Figure 4.

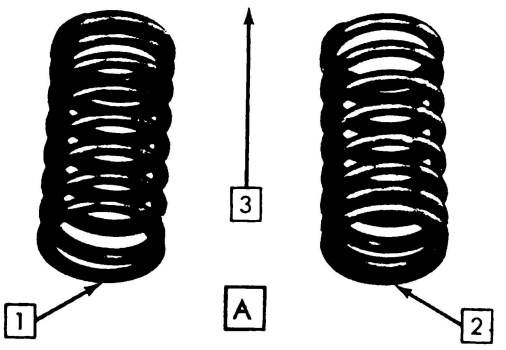


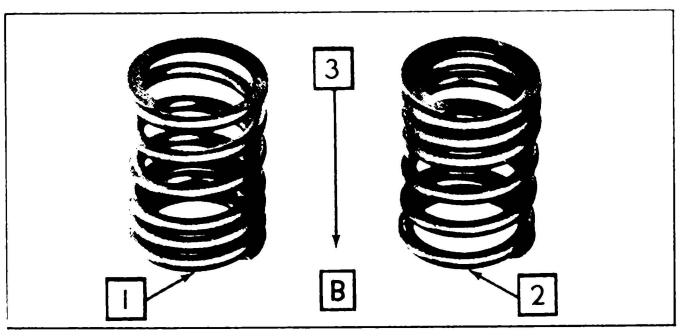
1. Pry bar
2. Brace

Figure 4—Removing a Valve Spring on the "Ambassador 6" Series.

Valve Spring Position

When installing valve springs, it is important that the closely coiled end of the spring should be installed toward the valve seat, as shown in Figure 5. This prevents a vibration period from developing at low engine speeds.





1. Correct position
2. Incorrect position
3. Arrow points to the valve seat

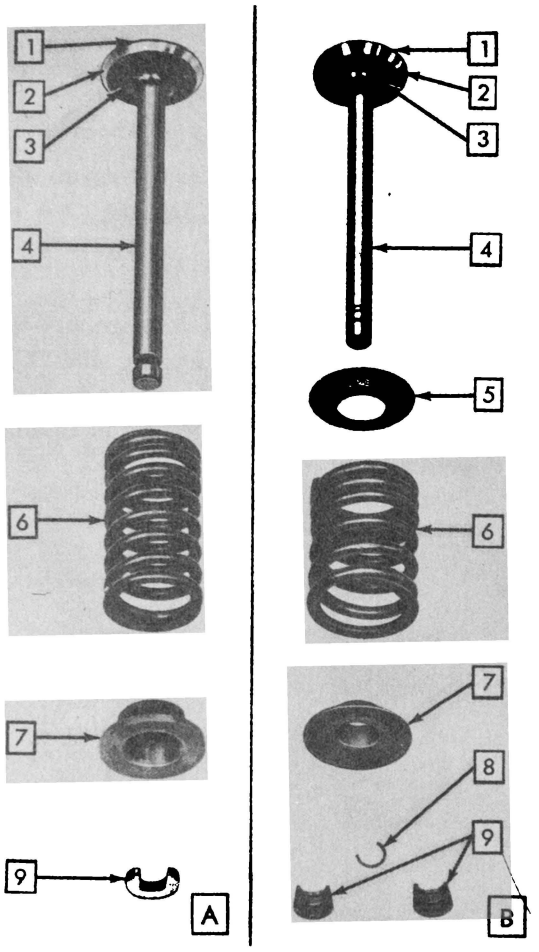
Figure 5—A. Correct Position of the Valve Spring—"600" Series.

B. Correct Position of the Valve Spring—"Ambassador 6" Series.

1949 "600" Series

CAUTION: *Make sure that the springs are seated in the counter bores of the cylinder block, to prevent excessive wear on the valve stems and valve guides.*

Figure 6 "A" and "B" shows the valve assembly sequence for the 1949 Series engines.



1. Valve margin
2. Valve face
3. Valve head
4. Valve stem
5. Valve spring retainer (lower)
6. Valve spring
7. Valve spring retainer "600" series
   Valve spring retainer upper "Ambassador 6" series
8. Safety lock
9. Valve locks

Figure 6—A. "600" Series Valve Assembly sequence.

B. "Ambassador 6" Series Valve Assembly Sequence.

Valve Adjustments

For peak performance and economy, the valve clearance is adjusted with the engine running at normal operating temperature. The method for adjusting the valves is shown in Figure 7 for the "600" Series engine and in Figure 8 for the "Ambassador 6" Series engine.

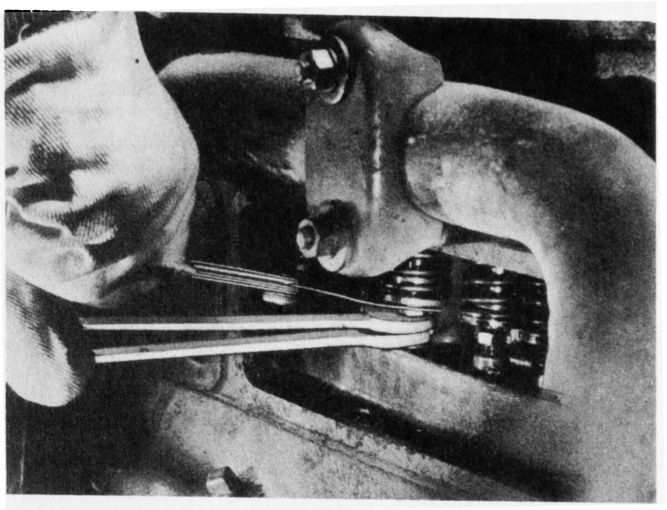


Figure 7—"600" Series Valve Adjustment (Valves adjusted at .015").

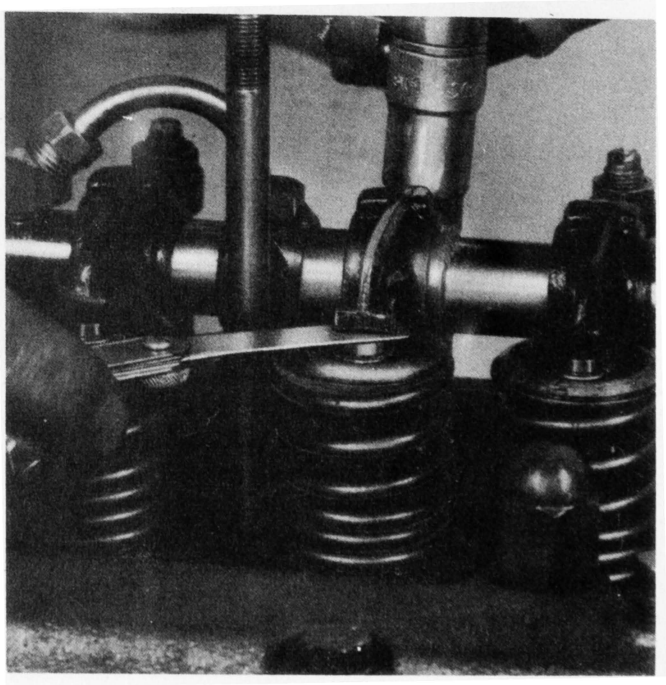


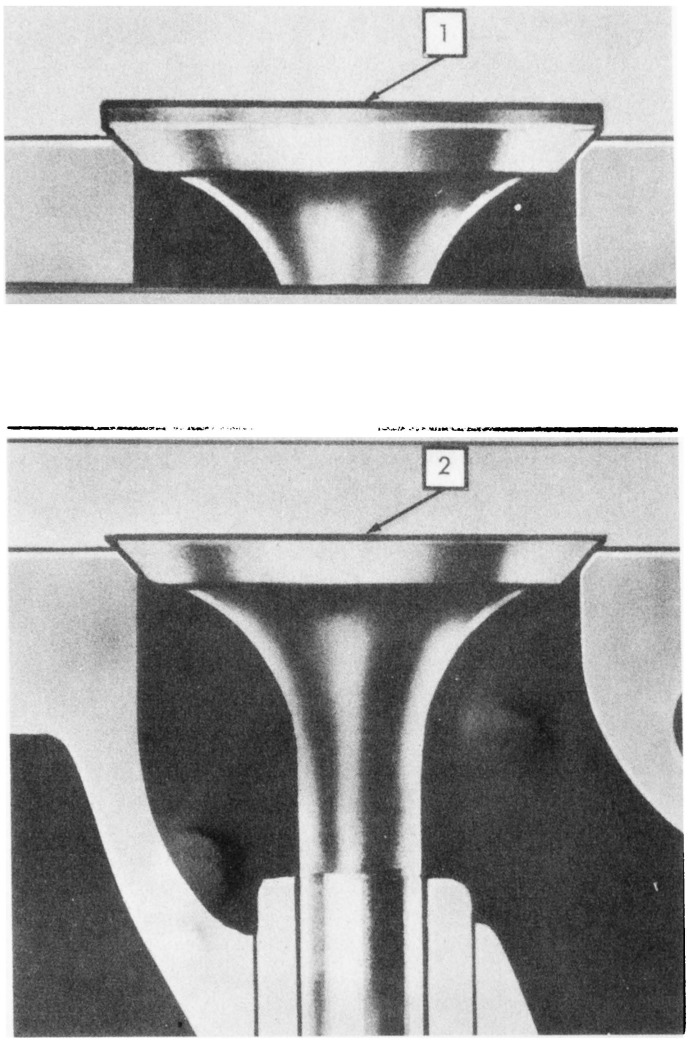
Figure 8—"Ambassador 6" Series Valve Adjustment (Valves adjusted at .015").

NOTE: *For continuous high speed operation, set the exhaust valve to .018" clearance on the "Ambassador 6" engine.*

Valve Refacing

It is important when valves are refaced that just enough metal be ground off to clean up the face. A valve should be replaced if, after refacing, there

would be less than approximately 1/16" thickness of metal left on the outer diameter of the valve head, known as valve margin and shown in Figure 9. A heavy valve margin aids in the dissipation of heat and helps avoid valve warpage.



1. Correct valve refacing
2. Incorrect valve refacing

Figure 9—Correct Valve Refacing.

Valve Stem to Guide Clearance

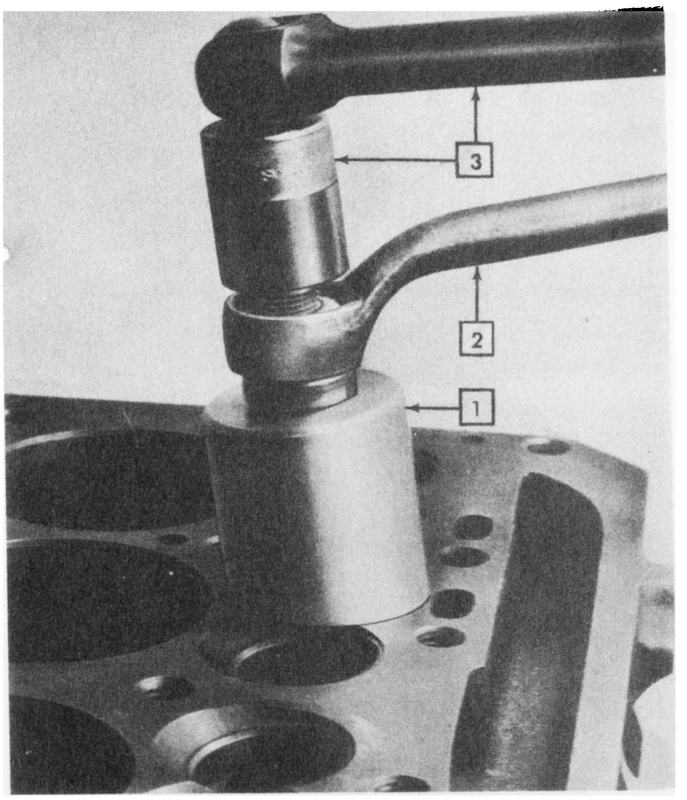
Inspect the diameter of the valve stem. If it is below the standard as specified, replace the valve.

Valve Stem Diameters

1949 "600" Series—.3412"
1949 "Ambassador 6" Series—.3725"

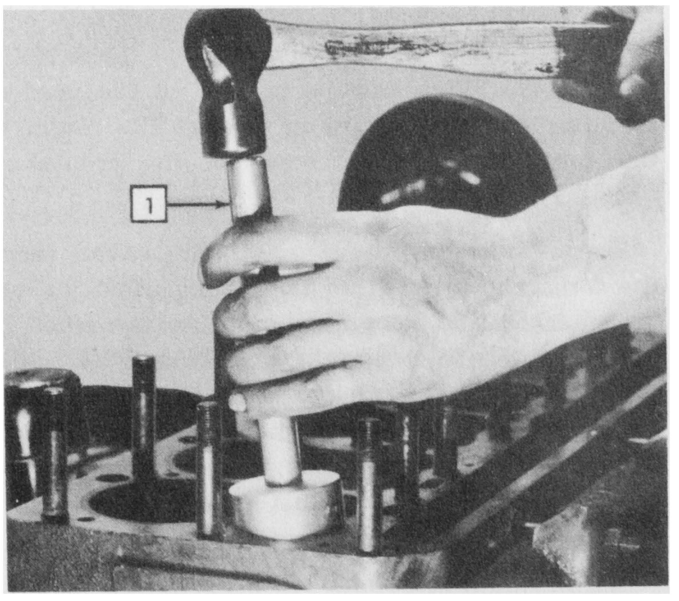
With a new valve, inspect the valve stem to guide clearance. This should be .002" to .003" on the "600" Series engine, and .002" to .004" on the "Ambassador 6" Series engine. Replace the valve guide if clearance is beyond the limits specified.

Valve guides are removed and replaced as shown in Figures 10, 11 and 12.



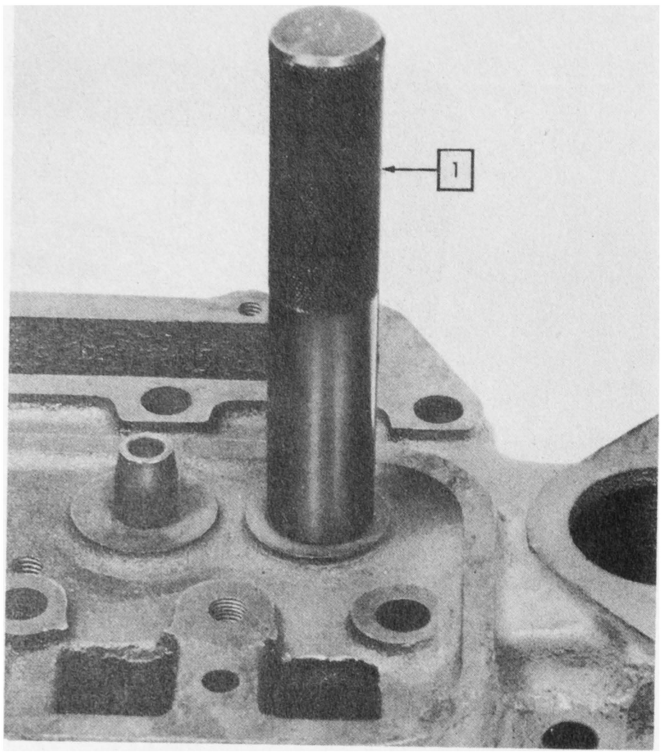
1. Valve guide removing tool (J-2814)
2. Box wrench
3. Socket wrench

Figure 10—Removing Valve Guides—"600" Series Engine.



1. Valve guide removing and replacing tool (J-1429-A) with adapter (J-1429-4)

Figure 11—Replacing Valve Guide—"600" Series Engine.



1. Valve guide replacing tool (J-2635)

Figure 12—Replacing Valve Guide— "Ambassador 6" Series Engine.

Valve Timing

Valve timing is determined by the relation between the sprocket on the camshaft and the sprocket on the crankshaft.

When installing new parts, line up the marked teeth on a centerline drawn through the center of the camshaft and the center of the crankshaft (Fig. 13).

Before installing the timing chain cover, check the correct installation of the timing chain. Locate the marked tooth of the camshaft sprocket at approximately the one o'clock position. This should place the marked tooth of the crankshaft sprocket where it begins to mesh with the chain (Fig. 14). Count the number of links between the marked teeth of both sprockets. This should be 9½ links, or 19 pins. Each link consists of two pins.

Valve timing may also be inspected by locating the No. 6 piston on T. D. C. in firing position. Then set valves on the *No. 1* cylinder to .003 inch clearance. Slowly rock the crankshaft back and forth. If timing is set properly, the exhaust valve should

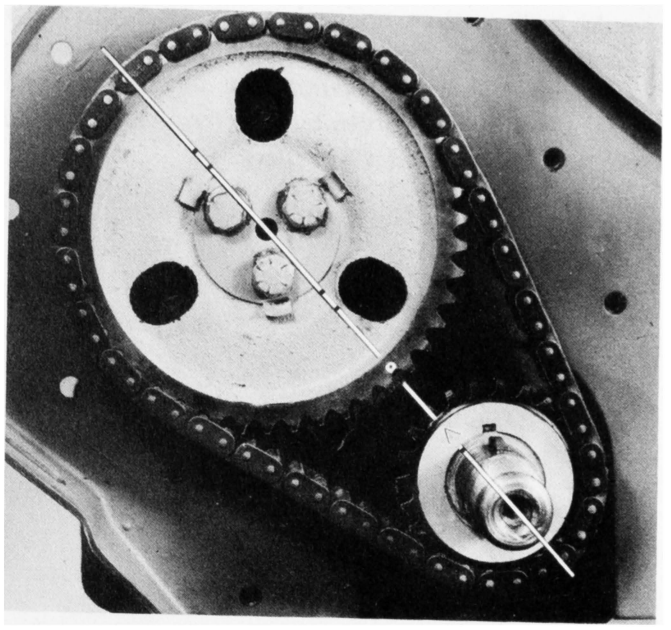
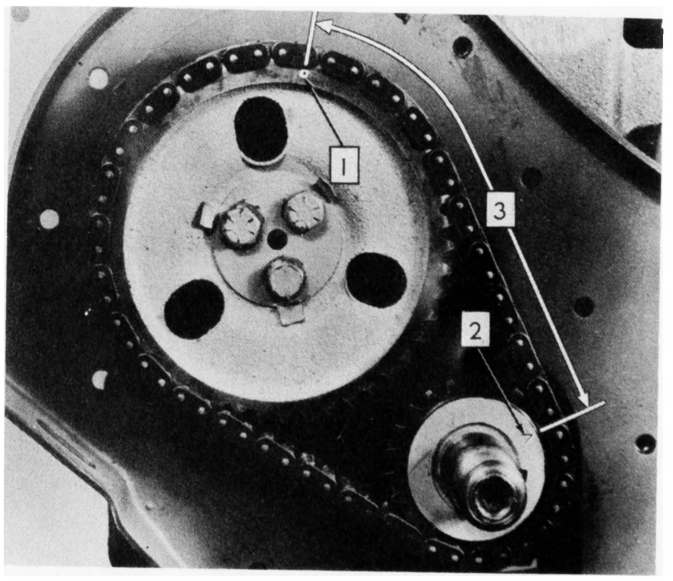


Figure 13—Place Marked Teeth on Center Line When Installing Sprockets and Chain.



1. Marked tooth on the camshaft sprocket
2. Marked tooth on the crankshaft sprocket
3. 9½ links or 19 pins

Figure 14—Correct Timing Chain Installation.

open before the D. C. mark on the vibration dampener lines up with the pointer. Note the amount of opening. Now the intake valve should open an equal distance after the D. C. mark passes the pointer.

Timing Chain Cover

The timing chain cover is provided with a felt seal to prevent the leakage of oil around the front

crankshaft pulley hub. To prevent damage to this seal, it is important that the cover be properly aligned when installing the vibration dampener. This is accomplished by leaving the cover to block screws loose until the vibration dampener has been partially installed. Then tighten the cover screws.

An oil slinger is used inside the timing chain cover. The slinger is held in place by the crankshaft sprocket.

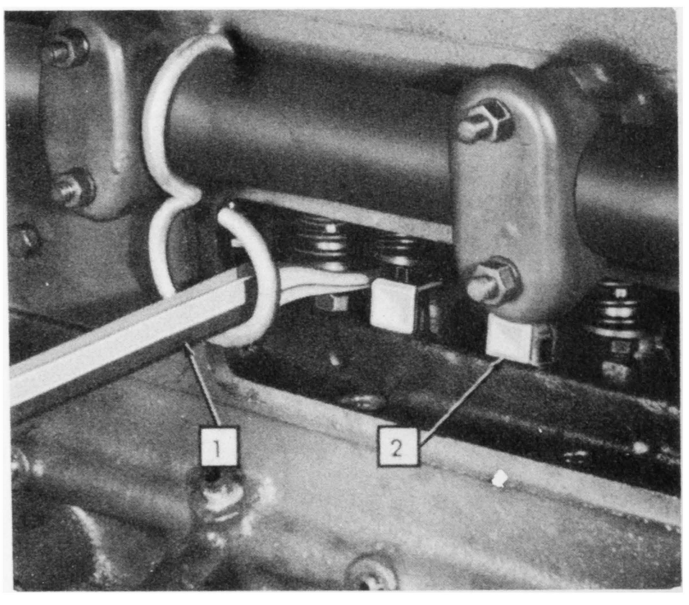
CAMSHAFT AND BEARINGS

The camshaft is supported by four steel-shelled, babbitt-lined bearings which have been pressed into the block and line-reamed. The camshaft bearings are step-bored, being larger at the front bearing than at the rear to permit easy removal and installation of the camshaft. All camshaft bearings are lubricated under pressure through drilled galleries in the cylinder block.

Removing the Camshaft

1949 "600" Series

The camshaft can be removed without removing the valves or the cylinder head by using tool J-1612 with adapters, as shown in Figure 15.

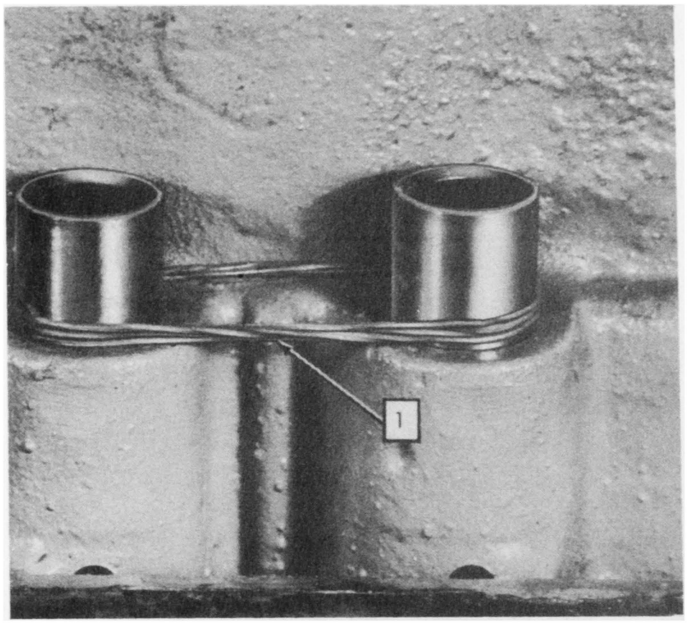


1. Tool J-1612
2. Adapters

Figure 15—Valve Tappet Tool and Adapters.

1949 "Ambassador 6" Series

To remove the camshaft, first remove the valve push rods. Then remove the valve cover plate and snap a rubber band around the valve tappets. This holds them so that the camshaft can be removed, as shown in Figure 16.



1. Rubber band

Figure 16—Hold the Tappets Up with a Rubber Band while the Camshaft is Pulled Out.

Camshaft End Play

The clearance between the camshaft front bearing and the camshaft sprocket should be .004" to .006" on the "Ambassador 6" Series. On the "600" Series this same measurement is taken between the camshaft thrust plate and the camshaft sprocket.

PISTONS

1949 "600" and "Ambassador 6" Series

The pistons are cam-ground, having a .007" larger diameter measured at right angles to the piston pin hole. They contain a steel strut for structural strength. When operating temperature is reached, the piston expands to fit the bore uniformly and provide correct operating clearance at all points.

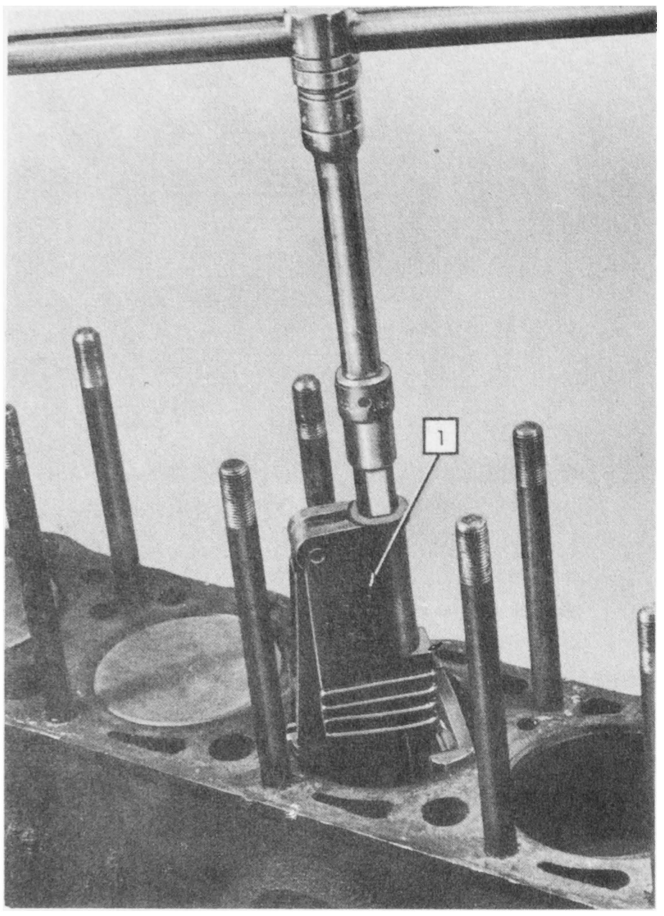
Fitting Pistons

Pistons are fitted so that each piston will support its own weight in any portion of the cylinder, with all parts clean and dry.

Before fitting the pistons, check the cylinder bores for out-of-round or tapered condition. This check is made with a cylinder gauge or dial indicator. If the bore is found to be out-of-round in excess of .004", it should be trued up by honing (rigid type).

Piston Removal

Piston removal is accomplished from the top of the engine. However before removing pistons the ring ridges in the cylinder bores must be removed (Fig. 17).



1. Ridge reamer

Figure 17—Ridge Reaming Before Piston Removal ("Ambassador 6" Series).

Failure to remove the ridge at the top of the cylinder bores will very often result in piston ring breakage and distortion of the piston-groove land.

Fitting Piston Rings

A four ring piston is used in both series engines. There are two compression rings and two oil rings.

Compression ring width	3/32"
Oil ring width	5/32"
Ring groove clearance (Compression and Oil)	.002" to .004"
*Ring gap	.010" to .015"

*NOTE: *Ring gap clearance is measured when the ring is at the bottom of its travel in the cylinder bore.*

Successful ring installation depends upon cleanliness in handling parts and while honing the cylinder walls. The engine bearings and lubrication system must be protected from abrasives.

All rings must be installed on the pistons with a ring installing tool, as shown in Figure 18, to prevent distortion and ring breakage.

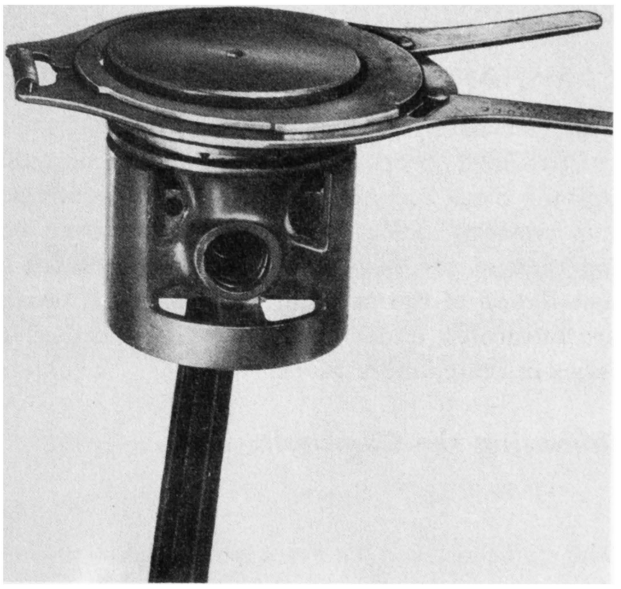


Figure 18—All Rings Should Be Installed with a Ring Installing Tool.

Before assembling the rings to the piston, carbon must be cleaned from all ring grooves (Fig. 19). The oil drain holes in the oil ring grooves must also be opened up by a slight ream with the proper

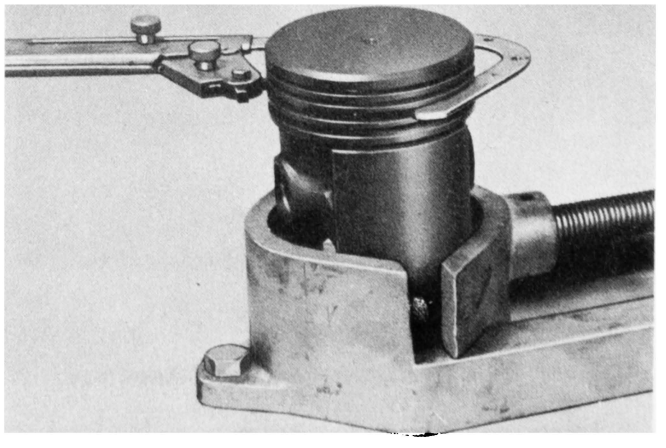
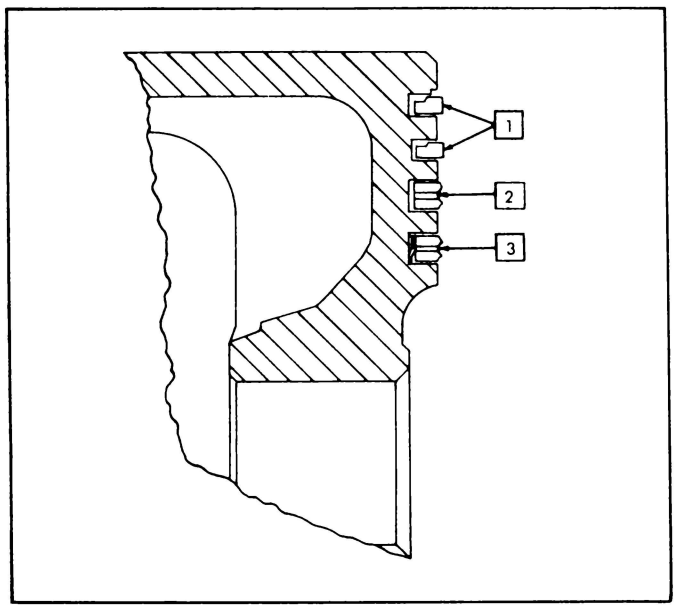


Figure 19—Cleaning Piston Ring Grooves ("Ambassador 6" Series).

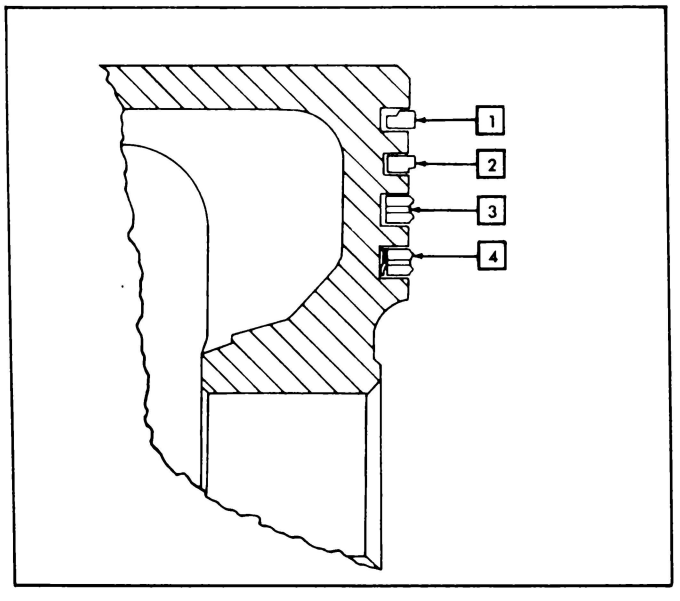
size drill. Care must be exercised not to remove metal from the grooves, since that will change their depth; nor from the lands, since that will change the ring groove clearance and destroy ring to land seating.

The following illustrations show ring installations (Figs. 20 and 21). Be sure to use the designated rings in their correct groove locations, with the correct side of the ring toward the top.



1. Inner groove up
2. Oil control ring
3. Oil control ring with ring expander

Figure 20—Ring Installation on "600" Series Piston.



1. Inner groove up
2. Outer groove down
3. Oil control ring
4. Oil control ring with ring expander

Figure 21—Ring Installation on "Ambassador 6" Series Piston.

Checking Ring Groove Clearance

Side clearance between land and piston ring should be .002" to .004". Roll the ring around the groove in which it is to operate. It must fit freely at all points (Fig. 22).

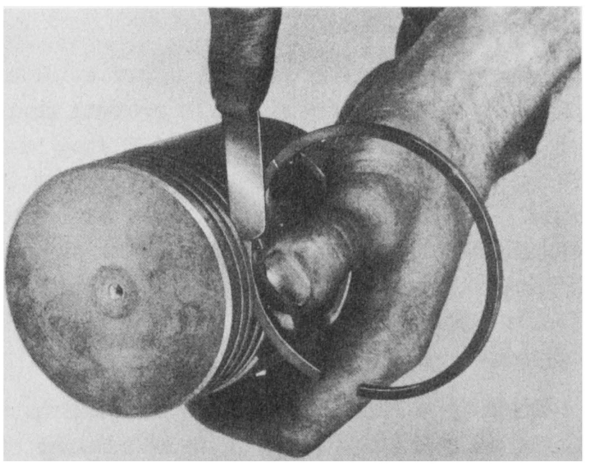


Figure 22—Checking Ring Groove Clearance.

Checking Ring Gap Clearance

Piston ring gap or joint clearance is measured in the bottom of the cylinder, near the end of the ring travel area. To square the ring in the bore for checking joint clearance, place the ring in the bore. Then, with an inverted piston, push the ring down near the lower end of ring travel area (Fig. 23).

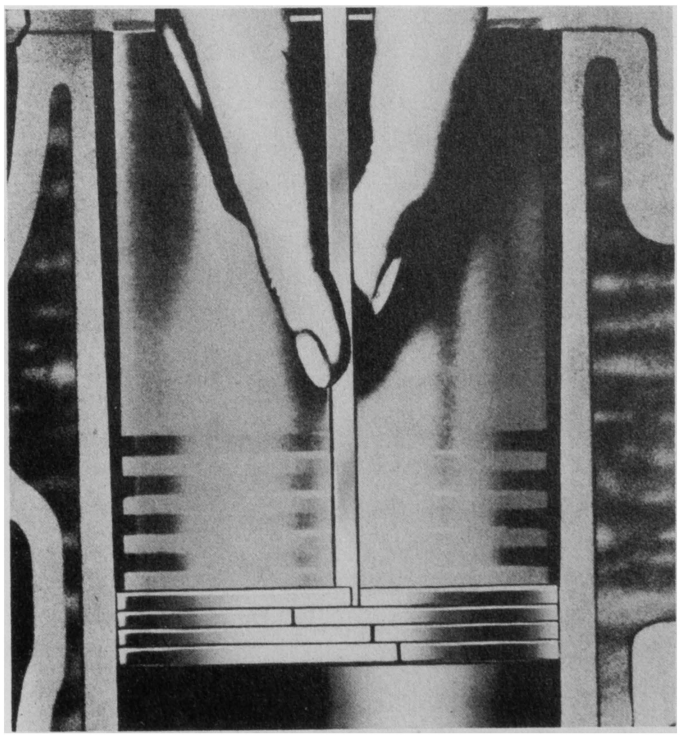


Figure 23—Checking Ring Gap Clearance.

When other than standard ring sizes are used, rings should be individually fitted to their respective bores.

If cylinder taper exceeds .009", bore must be trued up and oversize pistons and rings used.

Piston Ring Installation

Prior to ring installation, the upper cylinder ridge must be removed (Fig. 17) to prevent ring breakage or piston damage. For quicker ring seating, it is desirable to remove the glaze from the cylinder wall. This can be done by various methods. If the expanding type glaze-busting hone as shown in Figure 24 is used, do not use more than 10 strokes (each stroke down and return) to recondition a cylinder wall.

Rigid-type hones are not to be used to remove glaze, as there is always a slight amount of taper in cylinder walls after the engine has been in service.

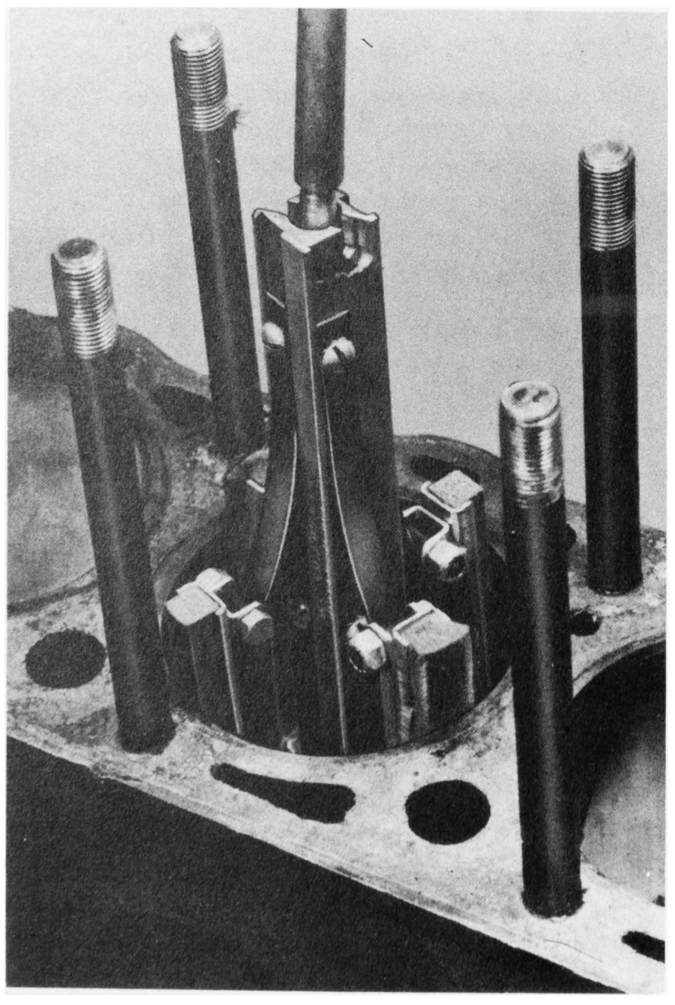


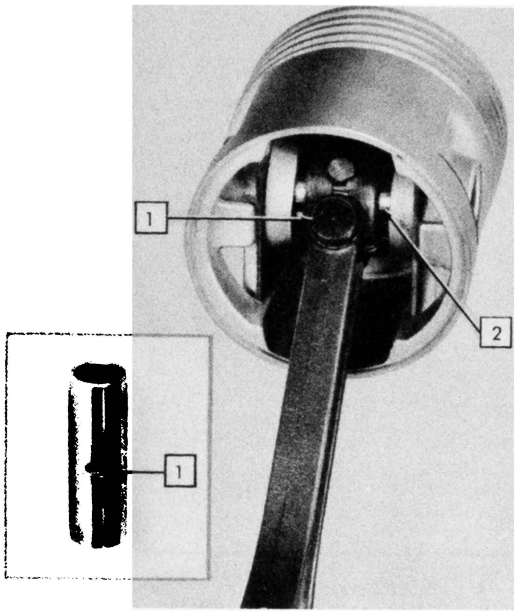
Figure 24—Glaze Removal with Expanding Type Hone ("Ambassador 6" Series).

PISTON PINS

1949 "600" Series

This piston pin is locked in place in the connecting rod by means of a locking bolt (Fig. 25).

To fit this pin, first hone the connecting rod to fit the pin. Then hone the piston to allow a thumb press fit, or .0003" maximum loose fit at room temperature (70 degrees).



1. Locking Bolt and Notch
2. Piston Pin

Figure 25—Piston Pin ("600" Series Shown).

1949 "Ambassador 6" Series

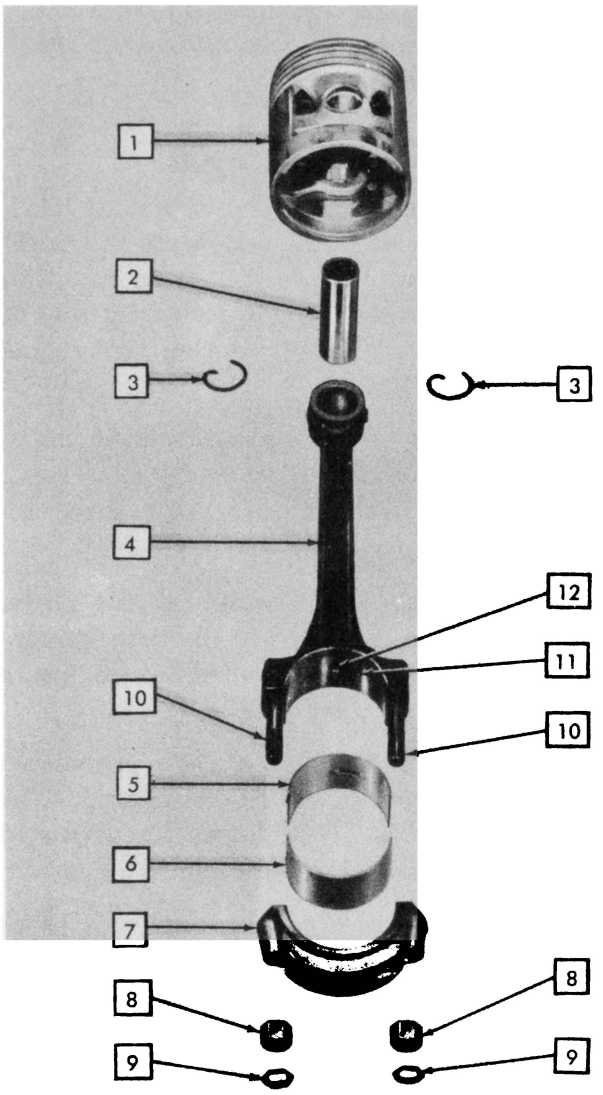
This is a full floating piston pin, held in the piston by lock rings. These rings are seated in ring grooves in the outer ends of the piston pin bosses (Fig. 26). To fit this pin, first hone the piston pin bushing in the connecting rod to allow a thumb press fit at room temperature (70 degrees). Then hone the piston pin hole to allow a palm push fit with the piston heated.

CAUTION: *Always use new lock rings and be sure that they are seated in the ring grooves.*

ASSEMBLY OF THE CONNECTING RODS TO THE PISTONS

1949 "Ambassador 6" Series

When assembling the connecting rod to the piston, make sure that the split skirt of the piston is opposite the squirt hole in the connecting rod.

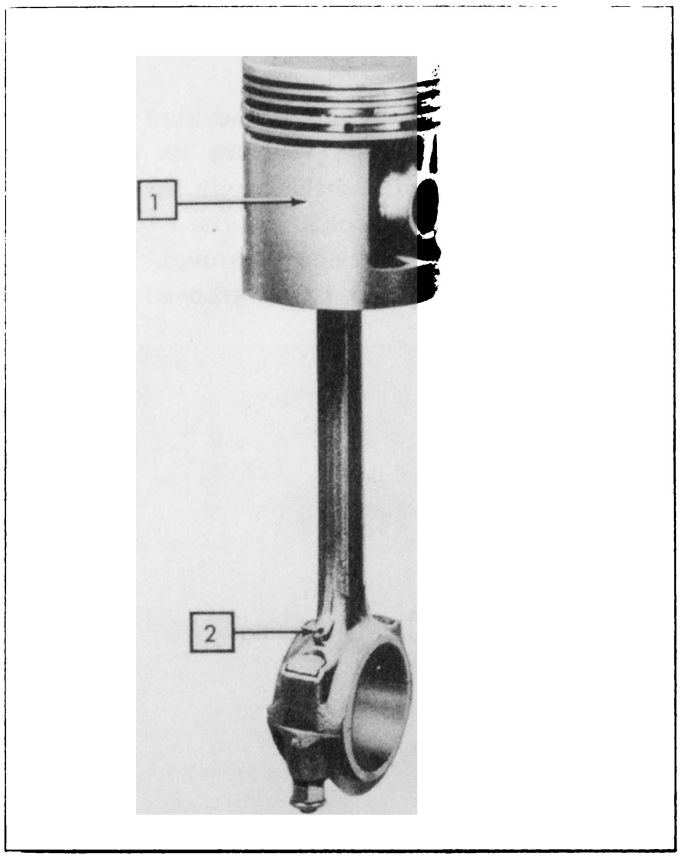


1. Piston
2. Pin
3. Pin locks
4. Rod
5. Upper bearing insert
6. Lower bearing insert
7. Rod cap
8. Rod bolt nuts
9. Pal nuts
10. Rod cap bolts
11. Oil hole for cylinder wall lubrication
12. Rifle drilled oil hole through rod

Figure 26—Connecting Rod, Piston, and Piston Pin Assembly. ("Ambassador 6" Series Shown).

Both Series

When assembling the piston and connecting rod assembly in the cylinder make sure that the squirt hole in the connecting rod is toward the camshaft side of the cylinder as shown in Figure 27. This is to insure correct lubrication of the cylinder wall and the piston.



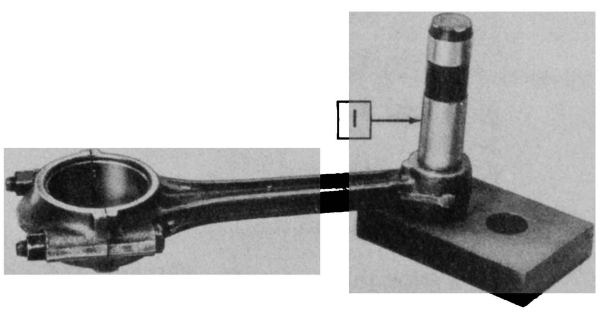
1. Solid side of skirt
2. Squirt hole in connecting rod

Figure 27—Correct Assembly of the Piston and the Connecting Rod ("Ambassador 6" Series Shown).

CONNECTING ROD BUSHING REMOVAL

1949 "Ambassador 6" Series

To remove the piston pin bushings from the connecting rod, use a connecting rod bushing remover, as shown in Figure 28.



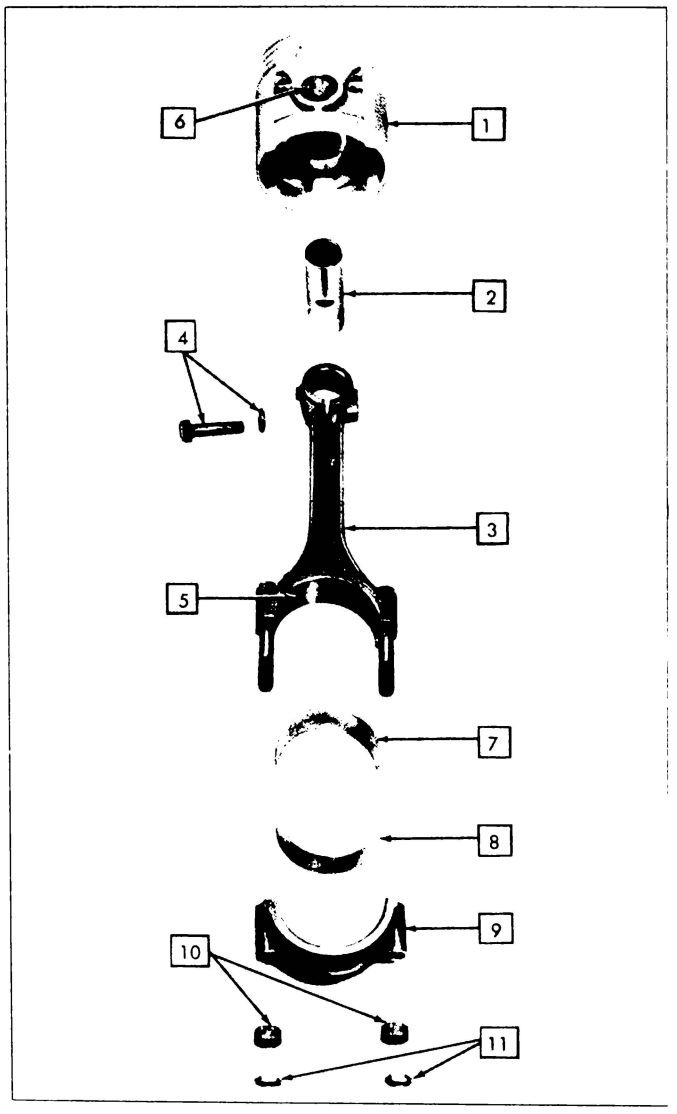
1. Connecting rod bushing remover and replacer (J-1427)

Figure 28—Removing Connecting Rod Bushings.

CONNECTING RODS

1949 "600" Series

This connecting rod is not rifle-drilled for piston pin lubrication. The pin receives its lubrication through four ⅛" holes, drilled from the top in the piston pin boss. Oil supplied by the wiping action of the oil rings drains down through these four holes from the oil control ring grooves (Fig. 29).



1. Piston
2. Pin
3. Connecting rod
4. Pin lock bolt and lock washer
5. Cylinder wall lubrication hole (toward camshaft)
6. Piston pin lubricating holes
7. Upper bearing insert
8. Lower bearing insert
9. Bearing cap
10. Rod bolt nuts
11. Pal nuts

Figure 29—Connecting Rod, Piston and Pin Assembly ("600" Series Shown).

CAUTION: *Make sure that these oil holes are clean before assembling the piston pin to the piston and connecting rod.*

1949 "Ambassador 6" Series

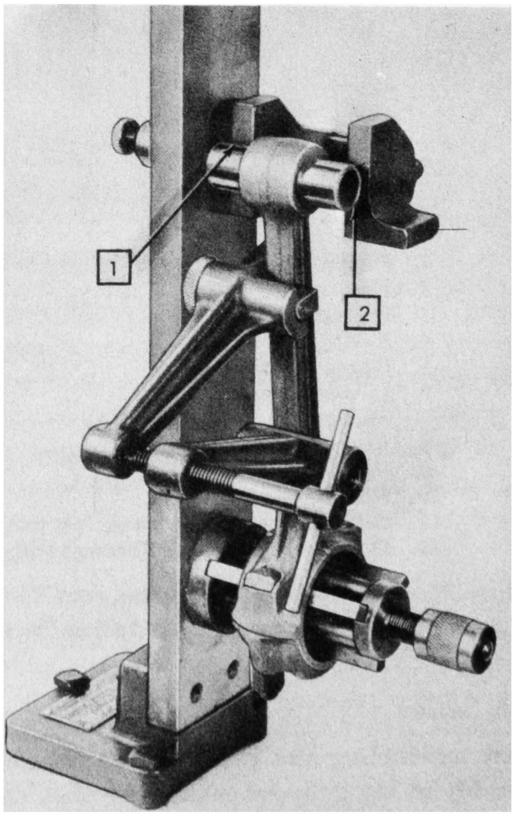
This connecting rod is rifle-drilled to provide lubrication, under pressure, to the piston pin rod bushing. There is also an oil hole drilled on the camshaft side of the connecting rod, for lubrication of the cylinder wall and piston during the engine warm up period (Fig. 25).

CAUTION: *Under No Circumstance Should This Hole Be Closed Off.*

Connecting Rod Alignment

Whenever new rings are installed or new piston pins are replaced, it is necessary to align the connecting rods and pistons as assemblies, to insure true operation in the cylinder bore.

Misaligned rods will cause uneven piston and ring wear, which will result in oil consumption. The connecting rod should be inspected for a twisted and a bent condition as shown in Figures 30 and 31.



1 and 2 . Use feeler gauge

Figure 30—Testing Connecting Rods for Twist ("Ambassador 6" Series Shown).

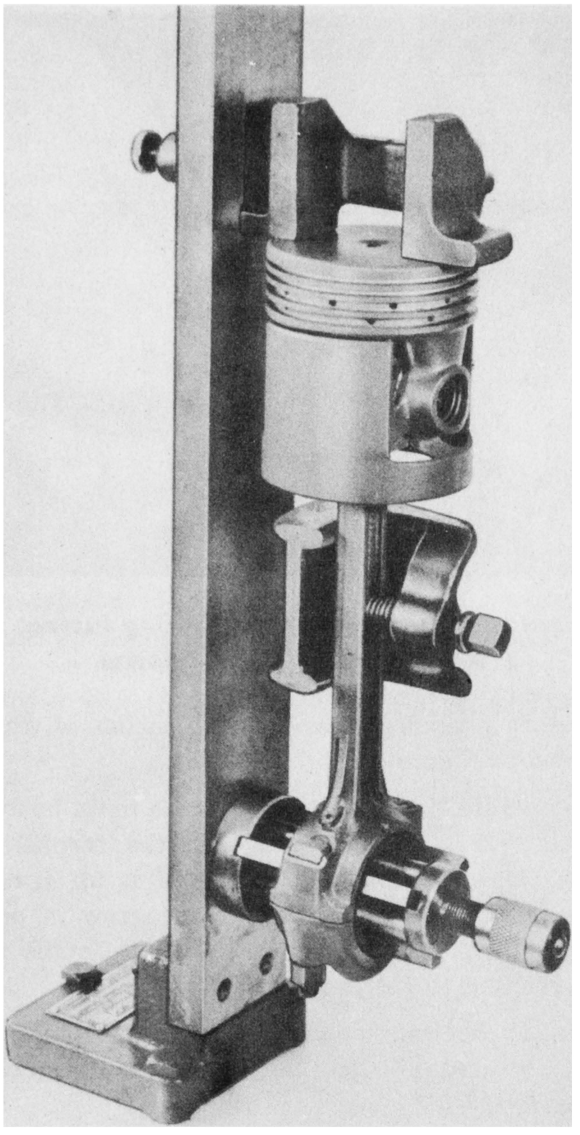


Figure 31—Testing Connecting Rod and Piston for a Bent Rod ("Ambassador 6" Series Shown).

Connecting Rod Bearings

The connecting rod bearings are the steel-backed, babbit-lined precision type. They are installed as pairs in the connecting rod and cap.

CAUTION: *Never file a connecting rod or connecting rod cap to adjust a bearing clearance.*

If the bearing clearance is excessive, the correct undersize bearing insert (pair) should be installed in the connecting rod.

The correct connecting rod bearing clearance should be .001" to .0025".

To determine the amount of bearing clearance, use a piece of Plastigage in the bearing cap, as shown in Figure 32. Then tighten the cap in position and compress the gauge.

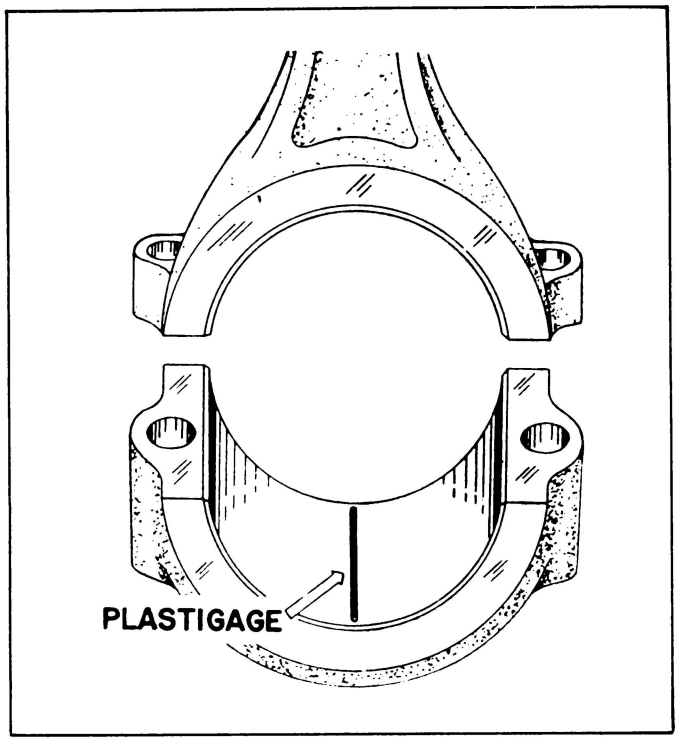


Figure 32—Plastigage in Place in the Bearing Cap.

Remove the bearing cap and calibrate the width of the Plastigage with the width scale furnished with the Plastigage, as shown in Figure 33.

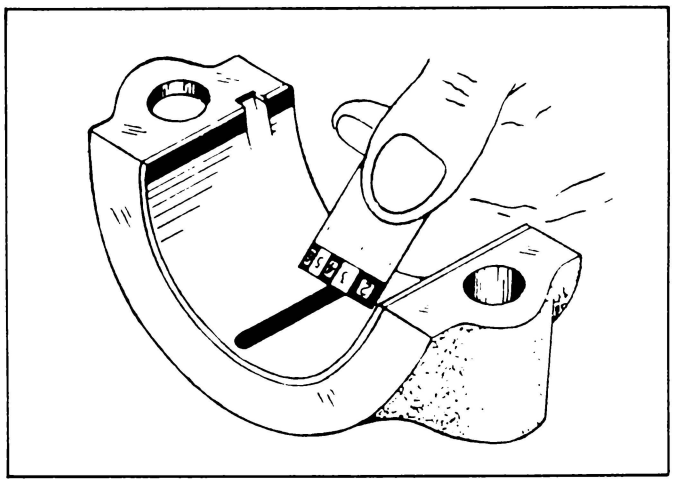


Figure 33—Measure the Width of the Plastigage with the Plastigage Scale.

Connecting Rod Bearing Caps

It is important that the connecting rod bearing cap bolts be drawn up with the correct tension. Always use new pal nuts.

Torque Specifications

1949 "600" Series—27 to 30 foot-pounds (dry).
1949 "Ambassador 6" Series—50 to 55 foot-pounds (dry).

CRANKSHAFT BALANCE

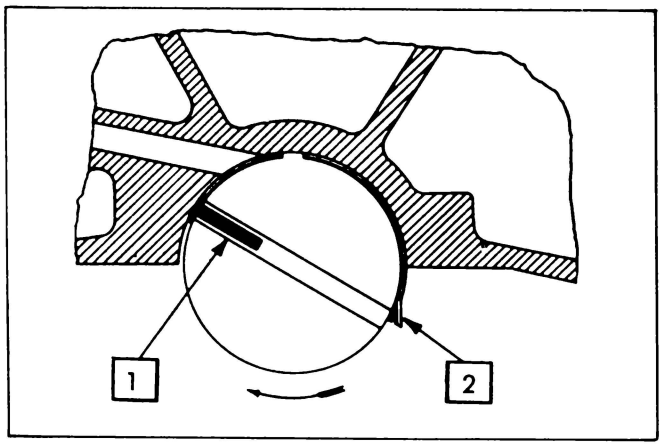
The crankshaft is balanced as an assembly with the vibration dampener and flywheel. For this reason, caution must be used when replacing the vibration dampener or flywheel on the original assembly. Be sure that balance holes are drilled in exactly the same location and to the same depth as the original parts were drilled.

CRANKSHAFT AND MAIN BEARINGS

Main bearings are of the precision type, having a steel back with a babbitt lining. They should always be serviced in pairs.

Bearings are not adjustable. *Shims should never be used, and the bearing caps should never be filed.*

When either half of a bearing requires replacement, a complete set should be installed. To replace the upper half of a bearing, remove the bearing cap of the bearing to be replaced. Then loosen all of the other bearing caps, and insert in the crankshaft oil hole a small pin about ½" long. The head of this pin should be large enough so that it will not fall into the oil hole, yet thinner than the thickness of the bearing (Fig. 34).



1. Removing tool
2. Bearing tongue

Figure 34—Removing Main Bearing Insert—Upper.

With the pin in place rotate the shaft so that the upper half of the bearing will rotate out in the direction of the locating tongue on the bearing.

A new bearing can be installed by reversing the above procedure.

Main Bearing Journals

Main bearing journals can be measured without removing the crankshaft from the engine block.

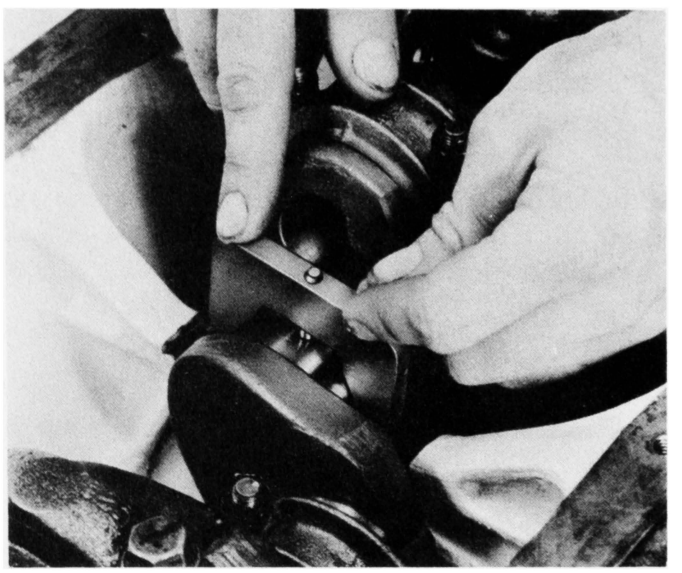


Figure 35—Measuring Main Bearing Journal ("Ambassador 6" Series Shown).

There are various gauges for this use, one of which is shown in Figure 35.

To operate this gauge, remove the main bearing cap and place the gauge against the crankshaft. Then release the plunger so that it is up against the journal and lock the adjusting screw in position. Remove the gauge carefully and double the mike reading to get the shaft diameter.

Always check both ends of the journal to get the taper. Then rotate the shaft and measure for out of round.

Crankshaft Journals

Series	No. Main Journals	Diameter
1949 "600"	4	2.479"
1949 "Ambassador 6"	7	2.479"
1949 "600" Crank Pins (Connecting Rod Bearings)		2.094"
1949 "Ambassador 6" Crank Pins (Connecting Rod Bearings)		2.000"

Main Bearing Caps

Main bearing caps are recessed into the engine block and line-reamed. Therefore it is not practical to replace them in the field.

Crankshaft Main Bearings

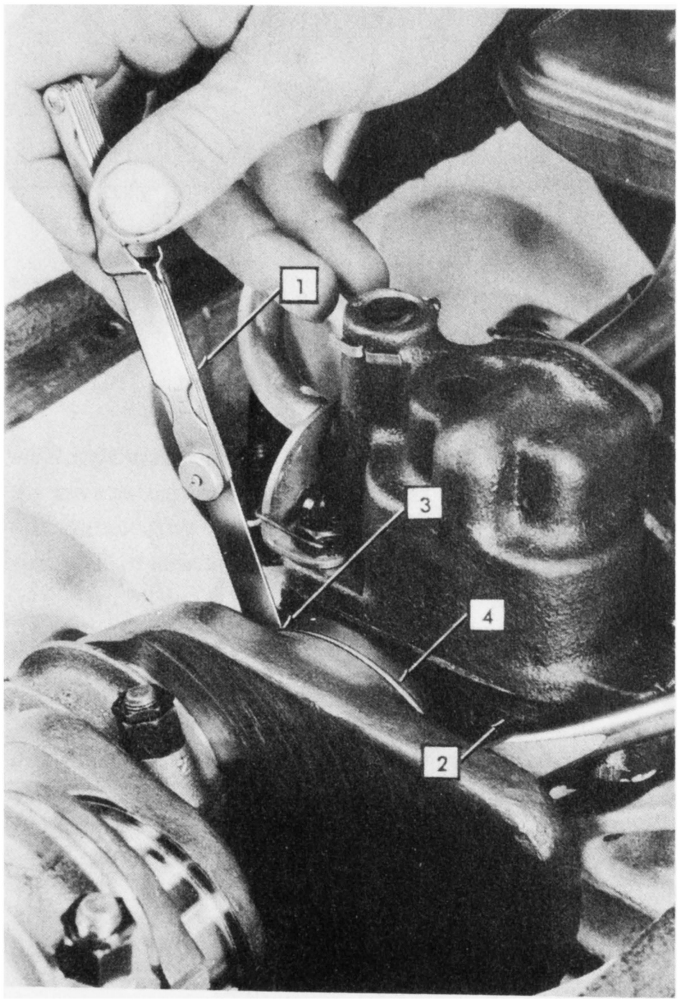
The standard clearance of .002" can be most accurately checked by the use of Nash Plastigage as follows:

Remove the bearing cap and wipe the oil from the bearing insert.

NOTE: *When checking bearing clearance—with the engine in such a position that the bearing caps support the weight of the crankshaft and flywheel—keep all main bearings tight except the one being checked.*

Place a piece of Plastigage across the full width of the bearing insert (Figs. 32 and 33).

Reinstall the bearing cap and tighten to the proper tension. Then remove the bearing cap and, with the graduated scale which is printed on the Plastigage envelope, measure the width of the flattened Plastigage at its widest point. The number within the graduation indicates the clearance in thousandths of an inch. Install proper size bearing liners (inserts) to bring the clearance to standard.



1. Feeler gauge
2. Center main bearing cap
3. End play .006" to .008"
4. Front of bearing

Figure 36—Checking Crankshaft End Thrust ("Ambassador 6" Series).

CRANKSHAFT END PLAY

1949 "Ambassador 6" Series

The end thrust on the "600" Series engine is taken on the flanged front bearing and should be .006" to .008".

1949 "Ambassador 6" Series

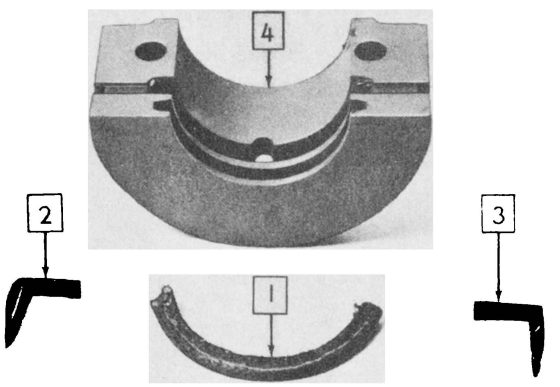
In this series engine, the crankshaft end thrust is taken at the center main bearing which is flanged for this purpose. The end play should be .006" to .008".

To check this clearance, pry the shaft toward the front and check the clearance between the front of the bearing and the shaft (Fig. 36).

REAR MAIN BEARING OIL SEALS

1949 "600" Series

The rear main bearing oil seal on this series is composed of two hemp packings, one in the block, the other in the cap. This packing prevents the entrance of dirt and the exit of any oil which may have passed the oil slinger on the rear main journal. Bearing cap and seals are shown in Figure 37.

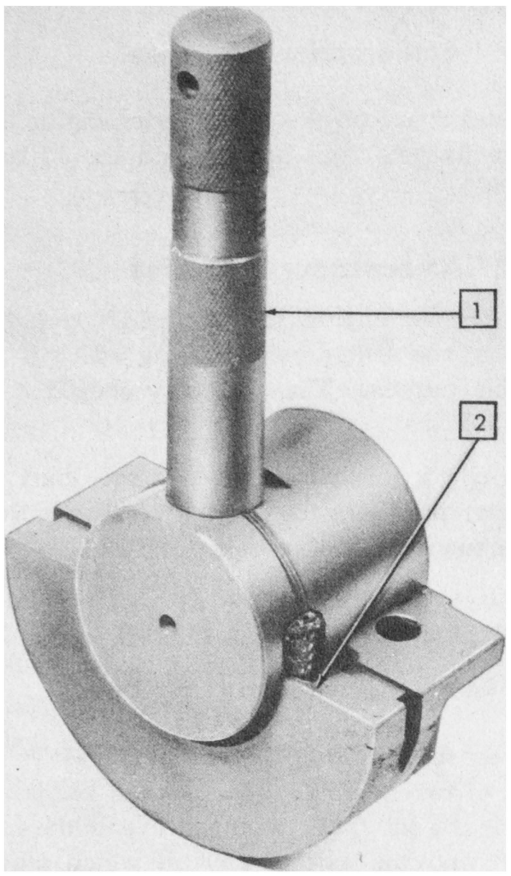


1. Hemp packing
2. Cap side seal
3. Cap side seal
4. Main bearing caps

Figure 37—Rear Main Bearing Cap and Seals ("600" Series).

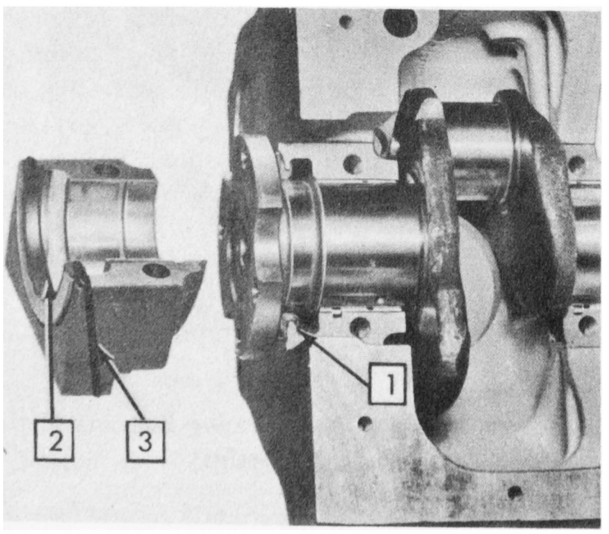
The hemp packing is driven into place with Tool J-1610, (Fig. 38). Excess packing is cut off flush with the cap.

When installing upper packing into block, the crankshaft must be removed.



1. Oil seal installing tool J-1610
2. Point at which packing is cut flush

Figure 38—Installing Hemp Packing Oil Seal in Rear Main Bearing Cap.



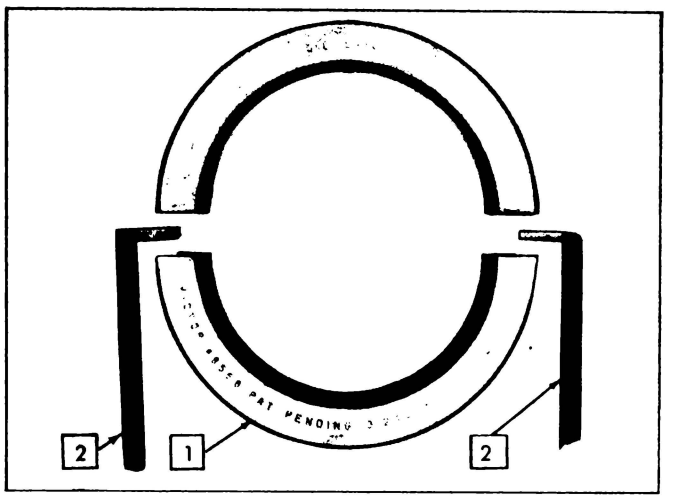
1. Upper seal
2. Lower seal
3. Side cap seal

Figure 39—Rear Main Bearing Oil Seals "Ambassador 6".

1949 "Ambassador 6" Series

A rear main bearing oil seal on this series is made up of a metal-backed, neoprene-lined seal (Figs. 39 and 40). A slinger on the rear journal provides the means for returning the bulk of the oil emitted from the rear bearing surface.

The oil seals, upper and lower, are serviced in a manner similar to main bearing inserts and should be serviced in pairs.



1. Upper seal and lower seal
2. Side cap seal

Figure 40—Rear Main Bearing Oil Seals ("Ambassador 6" Series).

VIBRATION DAMPENER

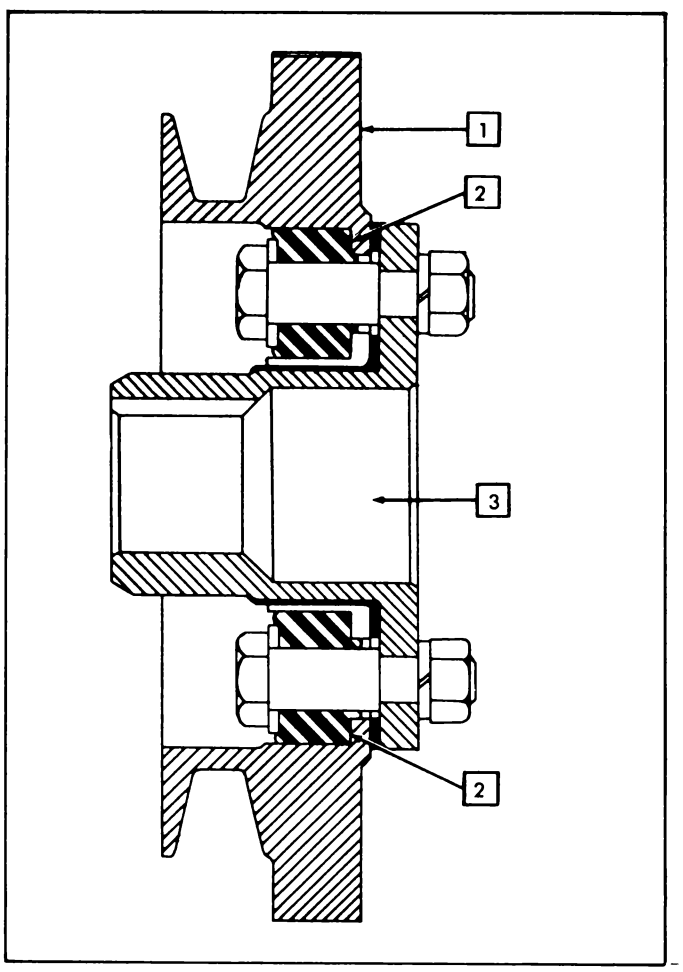
The vibration dampener is not adjustable. The screws that retain the rubber blocks are drawn up to the point where the shoulders will limit the tension of the rubber blocks, as shown in Figures 41, 42 and 43.

If it is necessary to replace the vibration dampener, the replacement part must have the balancing holes drilled to the same size, depth and angular location as the original dampener, to maintain the perfect balance of the crankshaft.

FLYWHEEL

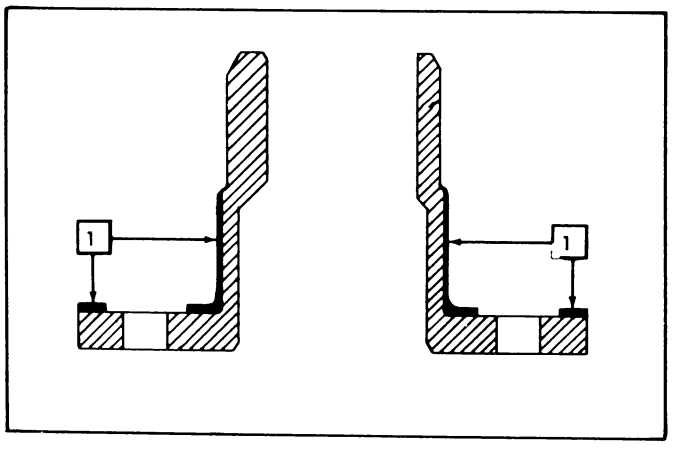
The flywheel, on which the starter ring gear is mounted, is balanced as an assembly with the crankshaft and vibration dampener.

When a flywheel is replaced, it is important that the balance holes be duplicated as to size, depth and angular location. After replacing the flywheel tighten the crankshaft to flywheel stud nuts with a torque wrench.



1. Pulley
2. Rubber blocks
3. Pulley hub

Figure 41—Vibration Dampener.

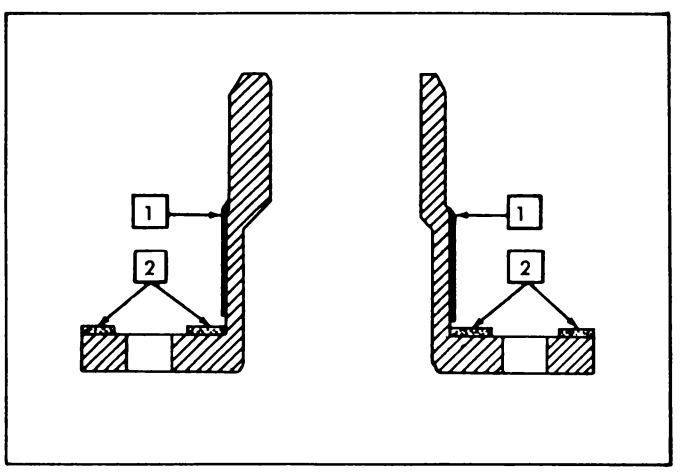


1. One piece rubber insulator

Figure 42—Vibration Dampener Hub ("600" Series Shown).

Torque Specifications

1949 "600" Series—50-55 foot-pounds.
1949 "Ambassador 6" Series—95-100 foot-pounds.



1. Rubber insulator
2. Anti-friction disc

Figure 43—Vibration Dampener Hub ("Ambassador 6" Series Shown).

STARTER RING GEAR

The starter ring gear can be replaced by placing the flywheel in an arbor press, with steel blocks equally spaced around the gear. Pressure will then remove the gear.

To install the starter ring gear, first heat it to expand the inside diameter so that it can be pressed over the flywheel.

CLUTCH SHAFT PILOT BEARING

The pilot bearing for the clutch shaft is located at the center of the rear end of the crankshaft. This is an oil impregnated bronze bearing. It is pressed into the end of the crankshaft. This bearing does not require any lubrication after assembly. When assembled in service, it is advisable to place a small amount of high melting point grease on the end of the clutch shaft as it is installed into the bearing.

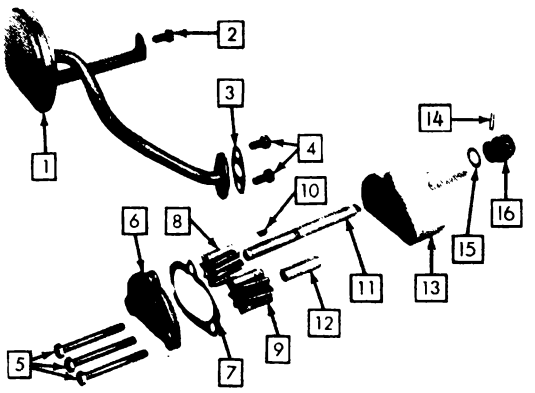
LUBRICATION SYSTEM

The lubrication system is the full pressure type with the one exception of the piston pin in the "600" Series.

Pressure is supplied by a gear-driven, gear-type, positive pressure pump.

1949 "600" Series

This oil pump is mounted on the outside of the engine block, on the right side.



1. Screen and retainer
2. Bolt
3. Inlet tube gasket
4. Bolts
5. Cap screws
6. Oil pump cap
7. Gasket
8. Drive gear (in pump)
9. Idle gear
10. Key
11. Oil pump drive shaft
12. Oil pump idle shaft
13. Oil pump body
14. Oil pump drive gear pin
15. Thrust washer
16. Oil pump drive gear

Figure 44—Oil Pump ("600" Series Shown).

1949 "Ambassador 6" Series

This oil pump is mounted on the center main bearing cap.

The oil pump shaft operates in a thin walled bushing, which is pressed into the engine block at the upper end and into the oil pump body at the lower end. The thrust of the pump is taken by a loose steel ball at the lower end of the pump body.

After the oil pan has been removed, this bushing can be removed and replaced from below by removing the pump assembly and shaft. However this bushing must be reamed to a .500" diameter after it is replaced. Excessive clearance at this point will cause low oil pressure (Fig. 45).

OIL PRESSURE RELIEF VALVE

1949 "600" Series

The oil pressure relief valve consists of a plunger, spring and retainer. It is located in the cylinder

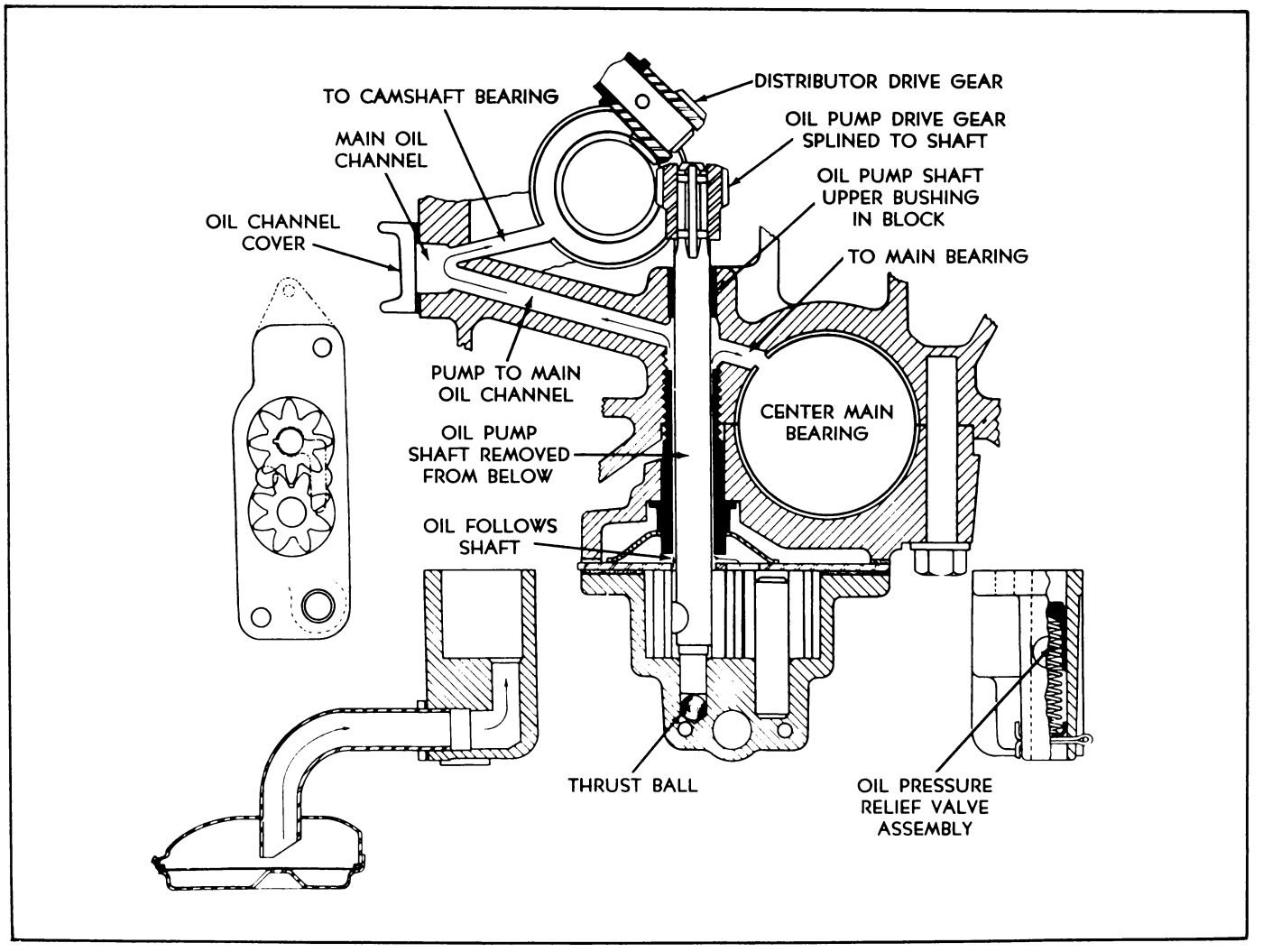
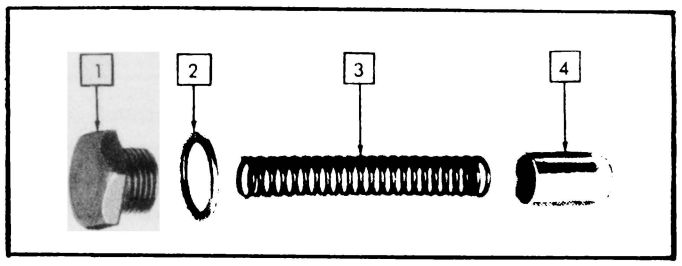


Figure 45—Oil Pump Assembly ("Ambassador 6" Series Shown).

block at the point where the oil line enters the oil channel (Fig. 46).



1. Housing plug
2. Gasket
3. Spring
4. Plunger

Figure 46—Oil Pressure Relief Valve ("600" Series Shown).

1949 "Ambassador 6" Series

On this series, the oil pressure relief valve is located in the body of the oil pump (Fig. 45).

The inlet tube and screen assembly is attached to the bottom and rear part of the oil pump body.

CAUTION: *Always maintain a tight connection between the inlet flange and oil inlet hole which is located on the right hand side at the bottom of the cylinder block on the "600" Series. On the "Ambassador 6" Series a tight connection should be maintained between the inlet flange and oil pump body.*

The oil pressure relief valve is not adjustable. A setting of 50-58 pounds pressure is built into the tension of the spring.

ENGINE OIL PAN

1949 "600" Series

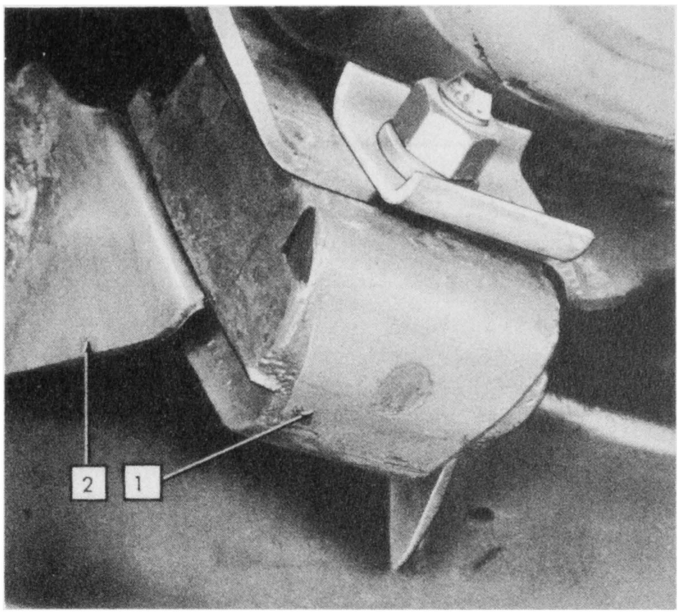
To facilitate removal of the engine oil pan it is suggested that the front of the engine be lifted. This will allow the front pan bolt, just below the generator, to be removed without difficulty.

1949 "Ambassador 6" Series

It will be necessary to raise the front of the engine approximately three inches to make room for the removal of the front pan bolts, and to make it possible to remove the pan without interference with number 1 and 2 crank throws.

ENGINE MOUNTINGS

Resilient rubber mounts are provided for the engines at 4 points (Figs. 47 and 48).



1. Cushion
2. Bracket

Figure 47—Front Engine Mounts ("600" Series).

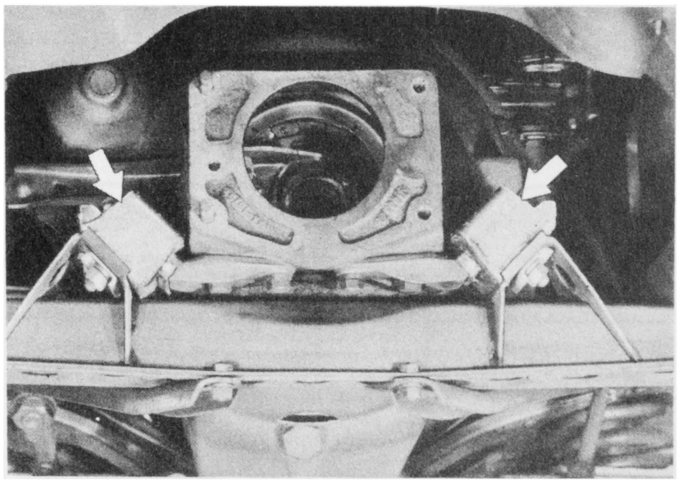


Figure 48—Rear Engine Mounts ("Ambassador 6" Series).

ENGINE SPECIFICATIONS

Year Series	1949 "600" Series	1949 "Ambassador 6" Series
Type	L Head	Valve-in-head
No. of Cyls.	6	6
Bore	3 1/8"	3 3/8"
Stroke	3 3/4"	4 3/8"
Piston Displacement	172.6 cu. in.	234.8 cu. in.
Compression Ratio	7.0-1	7.02-1
Compression Press. at Cranking Speed	120#	125#
Horsepower SAE Brake	82 @ 3800 r.p.m.	112 @ 3400 r.p.m.
Engine Lubrication	Pressure	Pressure

OIL SYSTEMS

Oil Pump Type	Gear	Gear
Normal Oil Pressure	30# @ 20 m.p.h.	30# @ 20 m.p.h.
Oil Pressure Release	50-58#	50-58#
Engine Oil Refill Capacity	5 qts.	6 qts.

CRANKSHAFT AND BEARINGS

Bearing Type	Replaceable	Replaceable
No. of Main Bearings	4	7
Main Bearing Clearance	.002"	.002"
Diameter	2.479"	2.479"
Shaft End Play	.006"-.008"	.006"-.008"
End Thrust Taken by	Front Main Brg.	Center Main Brg.
Bearing Cap Adjustment	65-70 ft.-lbs. (dry)	65-70 ft.-lbs. (dry)

VALVE SPECIFICATIONS

Year Series	1949 "600" Series	1949 "Ambassador 6" Series
Stem Diameter	.3412"	.3725"
Stem to Guide Clearance	.002"-.003"	.002"-.004"
Head Diameter Intake	1 15/32"	1 3/4"
Head Diameter Exhaust	1 9/32"	1 19/32"
Seat Angle	45°	45°
Valve Face Angle	44°	44°
Valve Spring Free Height	2 3/32"	2 3/32"
Valve Spring Pressure Valve Open	80-86# @ 1 7/16"	146# @ 1 11/32"
Valve Closed	37-41# @ 1 3/4"	53# @ 1 11/16"
Spring Retainer Lock	Single Horseshoe	Split Two-Piece
Tappet Clearance (Running Hot) Intake	.015"	.015"
Exhaust	.015"	.015"

PISTON RINGS

No. of Rings per Piston	4	4
End Gap Minimum	.010"-.015"	.010"-.015"
Compression Ring Width	3/32"	3/32"
Oil Ring Width	5/32"	5/32"
Compression Ring Side Clearance in Ring Groove	.002" to .004"	.002" to .004"
Oil Ring Side Clearance in Groove	.002" to .004"	.002" to .004"

CONNECTING ROD AND BEARING

Bearing Type	Replaceable	Replaceable
Bearing Clearance	.001"-.0025"	.001"-.0025"
Crank Pin Diameter	2.094"	2.000"
Bearing End Play	.006"-.014"	.006"-.014"
Bearing Cap Adjustment	27-30 ft.-lbs. (dry)	50-55 ft.-lbs. (dry)

TUNE-UP DATA

Series	Plug Gap	Tappet Clr. Hot	Dist. Point Gap	Dwell Angle	Ignition Timing (Vibration Dampener)
"600"	.025	.015	.018-.024	35°	T.D.C.
"Ambassador 6"	.025	.015	.018-.024	35°	T.D.C.

Engine Idle Speed—450-500 r.p.m.

Compression Pressure Cr. Speed—120 lbs. "600" Series, 125 lbs. "Ambassador 6" Series

Spark Advance (See Electrical Section—Distributor)

Firing Order—1, 5, 3, 6, 2, 4

Positive Battery Terminal Grounded

Coil—Secondary Terminal Tower, Negative Polarity

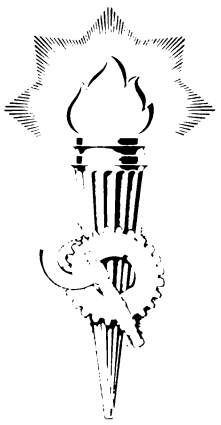
Breaker Point Spring Tension, Distributor 17-21 ozs.

Spark Plugs—"600" Series A-5, "Ambassador 6" Series AC-44. Spark Plugs are 14 mm. thread, maximum torque 30 lbs.

Tappet adjustment—.015" Hot. Engine Running.

Cylinder Head Stud Nut Torque Specifications:
"600" Series—60-65 ft.-lbs.
"Ambassador 6" Series—65-70 ft.-lbs.

COOLING SYSTEM SECTION



Nash

TECHNICAL SERVICE MANUAL

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FAN BELT ADJUSTMENT	2
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COOLING SYSTEM SECTION

NASH TECHNICAL SERVICE MANUAL

FAN BELT DESCRIPTION

The cooling system fan, generator and water pump are driven by a "V" type fan belt from a pulley on the vibration damper. This pulley and vibration damper are mounted on the front end of the crankshaft.

FAN BELT ADJUSTMENT

The fan belt is adjusted by sliding the fan assembly, up or down, on its mounting at the front of the engine block. The fan belt is correctly adjusted if the deflection of the belt between the fan pulley and the generator pulley is within ½" as shown in Figure 1.

It is important that the proper tension of the fan belt be maintained to insure efficient operation of the cooling and electrical systems. Too much tension on the fan belt will cause excessive wear on the fan and generator bearings.

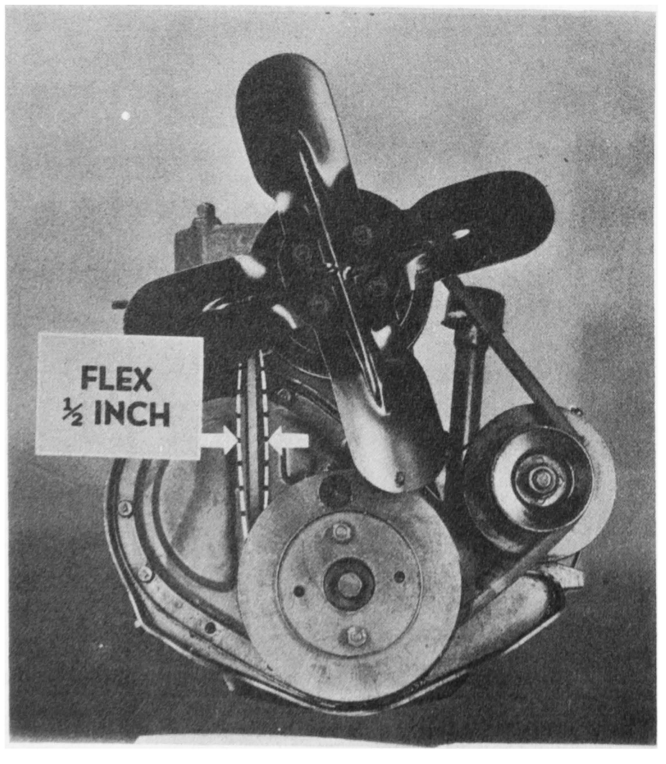


Figure 1—Fan Belt Adjustment.

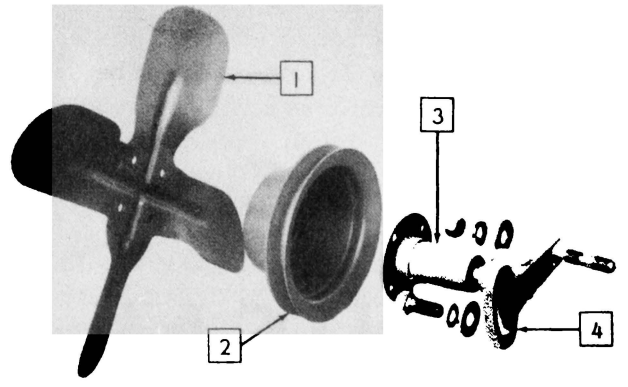
FAN AND HUB

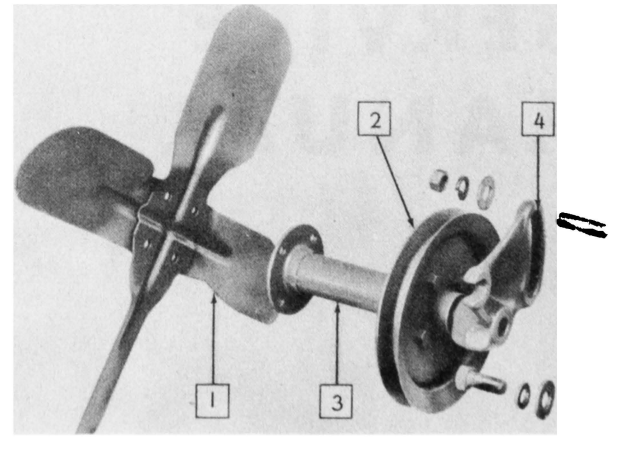
1949 "600" and "Ambassador 6" Series

The cooling system has a four-blade fan which provides efficient cooling at low road speeds and for engine idling operation.

The fan hub bearings are of the ball-bearing type. These bearings do not require periodic lubrication as they are packed and sealed during manufacture.

The fan mounting bracket, at the front of the engine block, is provided with a slot that allows for the adjustment of the fan belt as shown in Figure 2, A and B.





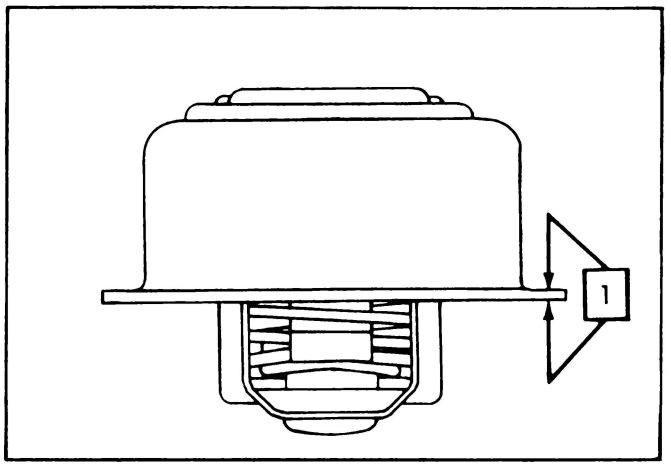
1. Fan
2. Fan pulley
3. Fan hub and bracket
4. Fan belt adjustment slot

Figure 2—(A) "600" Series Fan Assembly. (B) "Ambassador 6" Series Fan Assembly.

THERMOSTAT

1949 "600" and "Ambassador 6" Series

A thermostat is used in the cooling system to insure proper engine operating temperatures for maximum economy and long engine life (Fig. 3).



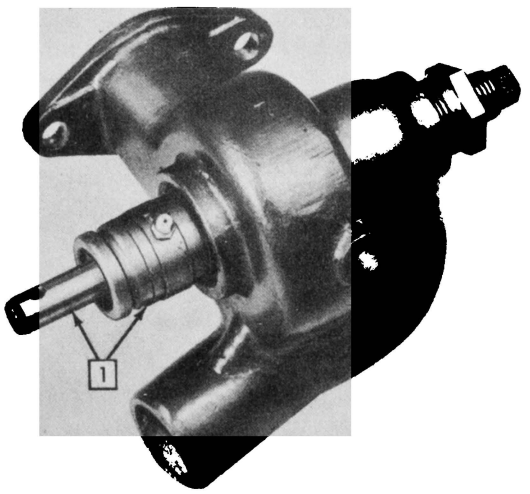
1. When installing, seal at these points with a gasket.

Figure 3—"600" and "Ambassador 6" Series Thermostat.

This thermostat is located in the cylinder head water outlet housing. It should always be used, as it is possible to overcool an engine as well as overheat one.

TESTING A THERMOSTAT

The opening point of a thermostat should be at a temperature of 162° to 168° at a barometric reading of 29.00". The wide open point of the thermostat should be 20° above the opening point.



1. Sealed-in shaft sealing assembly

Figure 4—"Ambassador 6" Series Water Pump.

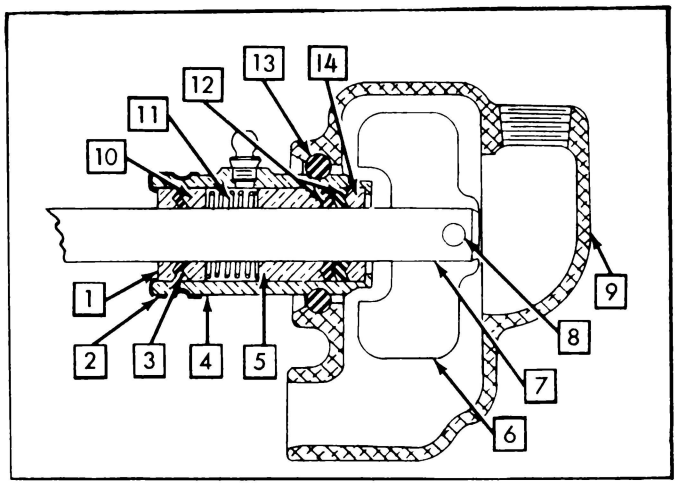
WATER PUMPS

1949 "600" and "Ambassador 6" Series

The water pumps are of the centrifugal blade type, with a sealed-in shaft sealing assembly (Fig. 4). The seals are held tight to the shaft under tension from the seal gland spring and are non-adjustable.

The seal assembly is of the cartridge type, installed and serviced as a unit. It is mounted and sealed in the pump body by means of a flexible rubber ring, having a circular cross section. This design permits the entire seal bearing cartridge to align itself with the shaft and still absorb radial loads imposed by the hydraulic forces on the impeller, as shown in Figure 5.

The seal gland spring chamber acts as a reservoir for the lubricant, to lubricate the shaft and bushing.



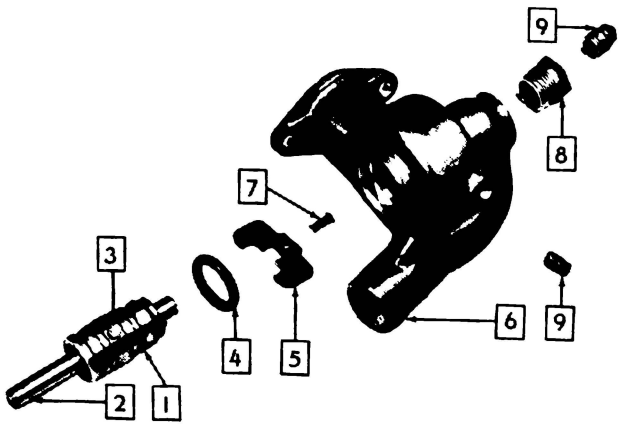
1. Outer water pump seal gland
2. Water pump seal housing cap
3. Water pump seal
4. Water pump seal housing
5. Water pump shaft bushing
6. Water pump impeller
7. Water pump shaft
8. Rivet
9. Water pump body
10. Inner water pump seal gland
11. Water pump seal gland spring
12. Inner water pump seal
13. Water pump seal housing rubber ring
14. Inner water pump seal gland

Figure 5—"600" Series Water Pump.

DISASSEMBLY OF THE WATER PUMP

1949 "600" and "Ambassador 6" Series

First, remove the impeller and pull the seal and shaft assembly out of the water pump body as shown in Figure 6.



1. Water pump seal assembly
2. Water pump shaft
3. Water pump grease fitting
4. Flexible rubber retaining ring
5. Water pump impeller
6. Water pump body
7. Impeller rivet
8. Heater reducer fitting
9. Pipe plugs

Figure 6—Water Pump Assembly Sequence—"Ambassador 6" Series Shown.

ASSEMBLY OF THE WATER PUMP

1949 "600" and "Ambassador 6" Series

To assemble the water pump, first insert a new rubber retainer in the water pump body. Then apply a small amount of rubber lubricant to the inner part of the rubber ring. This will aid in installing the seal assembly and shaft.

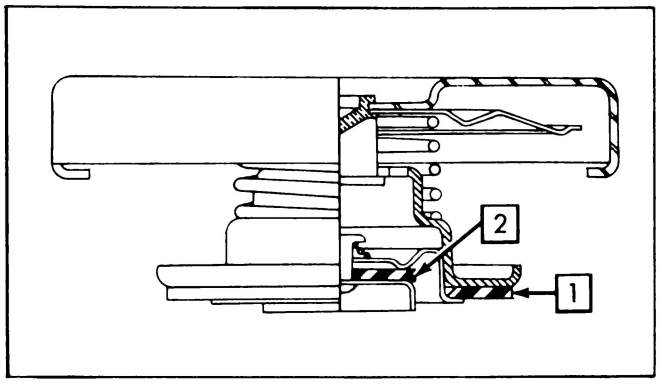
Install the impeller on the shaft and use a new brass rivet to fasten the impeller to the shaft.

RADIATOR

1949 "600" and "Ambassador 6" Series

Radiator Pressure-Type Filler Cap

In both series a positive pressurized type of cooling system is used. The increase in pressure is obtained by the use of a positive type sealed radiator cap. This cap has two valves, a pressure relief valve and a vacuum relief valve, as shown in Figure 7.



1. Pressure valve seal
   (Relieves at 4 lbs. of pressure)
2. Vacuum relief valve
   (Air vent)

Figure 7—Pressure Type Radiator Filler Neck Cap.

The advantage of the pressure system is that the coolant will maintain a higher boiling point. This will also maintain a slightly higher engine operating temperature with more efficient control.

With this system, anti-freeze solutions will be retained longer as the loss through evaporation will be prevented.

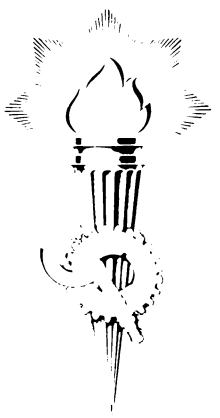
Drain Cocks

A drain cock is provided at the bottom of each radiator. It is located on the left side of the "600" Series and the right side of the "Ambassador 6" Series.

Cooling System Capacities

"600" Series	14 qts.
"Ambassador 6" Series	17 qts.

ELECTRICAL SECTION



Nash

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ELECTRICAL SECTION

NASH TECHNICAL SERVICE MANUAL

GENERATOR

1949 "600" and "Ambassador 6" Series

Description

The generator is the heavy-duty shunt type—two-brush, six volts, belt driven. The armature rotates in a clockwise direction as viewed from the drive end. Ventilation is provided by a centrifugal fan on the pulley end of the armature shaft. The shaft is supported by a ball bearing at the driven end and a needle bearing at the commutator end (Fig. 1).

The maximum output of the generator is controlled by the current regulator, mounted on the engine side of the dash.

Lubrication

The generator bearings are lubricated through hinge cap oilers located at either end of the generator housing. Each hinge cap oiler should be supplied with 10 to 20 drops of light engine oil every 1000 miles.

CAUTION: *Do not over-lubricate the generator and* DO NOT LUBRICATE THE COMMUTATOR.

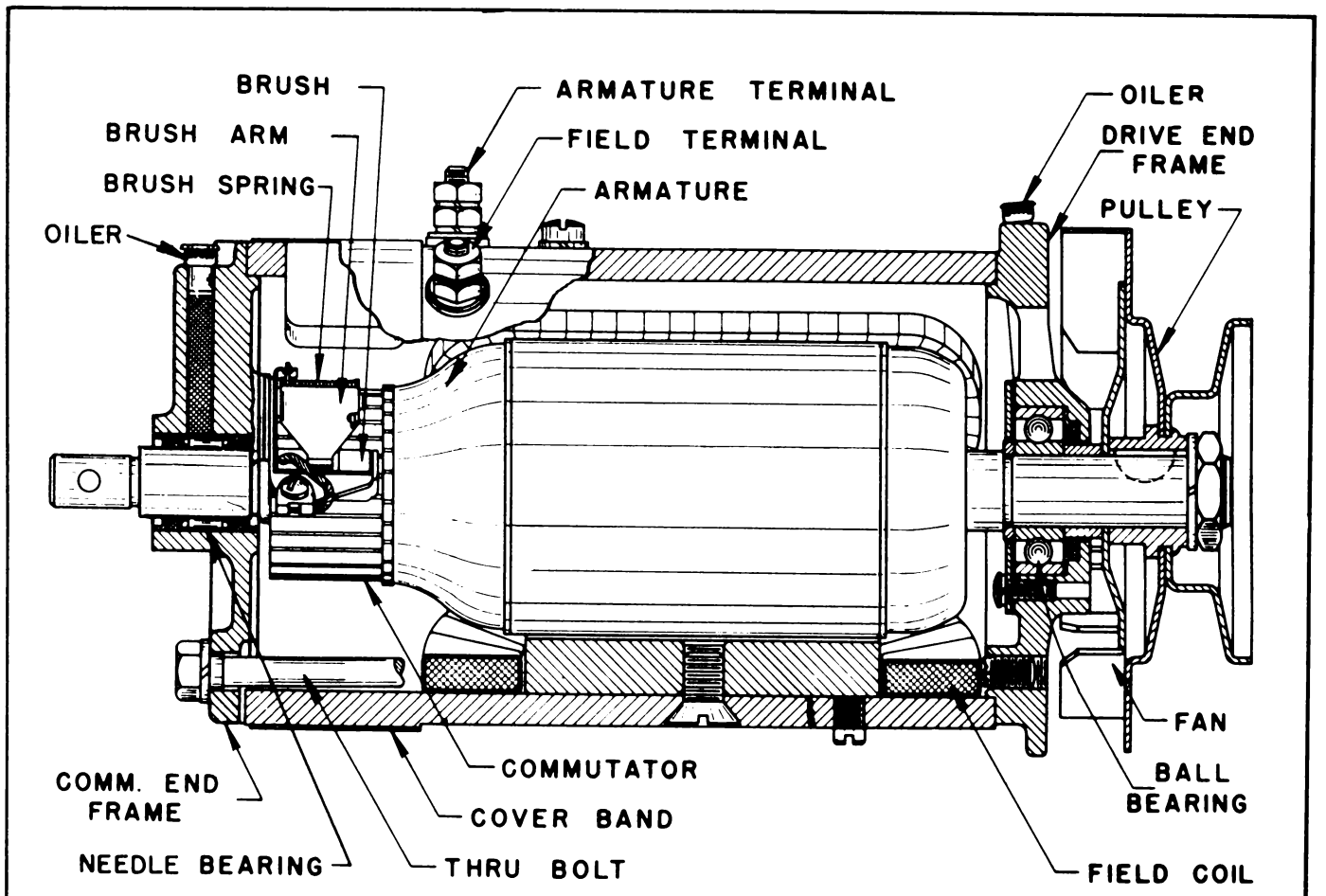


Figure 1—"600" and "Ambassador 6" Series Generator.

Inspection

All connections should be clean and tight. The cover band should be removed and the commutator and brushes inspected at regular intervals.

If the commutator is dirty or discolored, it should be cleaned by holding a strip of No. 00 sandpaper against it with a piece of soft wood and turning the armature slowly. If it is worn, rough or pitted, the armature should be removed and the commutator turned down in a lathe. After turning down, always undercut the mica $\frac{1}{32}$" (Fig. 2).

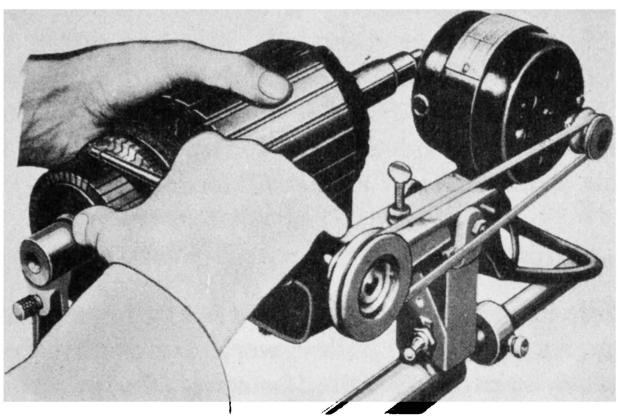


Figure 2—Undercutting Mica.

Brushes should be free in their holders. New brushes may be seated by wrapping a strip of No. 00 sandpaper tightly around the commutator with the sanded side to the brushes. Slowly turn the armature in a clockwise direction until the brushes are fitted to the commutator. Blow out all the sand and carbon dust from the generator. The generator should then be run on test long enough to secure a good brush fit over the contact surface.

Brush spring tension should be 24 to 28 ounces. Check this tension with a spring scale hooked in the lip in the end of the brush arm. Take the reading at the instant the arm leaves the brush. Excessive tension will cause rapid brush and commutator wear. Low spring tension will cause arcing and burning of the commutator and brushes, and result in reduced generator output.

Field current should be 1.75 to 1.90 amperes at 6 volts.

Polarity

After the generator has been disconnected and then reconnected, it should not be operated until the proper field polarity is assured. This may be accomplished by momentarily connecting the "GEN" and "BAT" terminals of the regulator with a jumper lead. This short surge of current to the generator assures that the generator will be correctly polarized with respect to the battery it is to charge.

CAUTION: *Never operate the generator on open circuit since this would allow it to build up sufficient voltage to cause serious damage to the unit.*

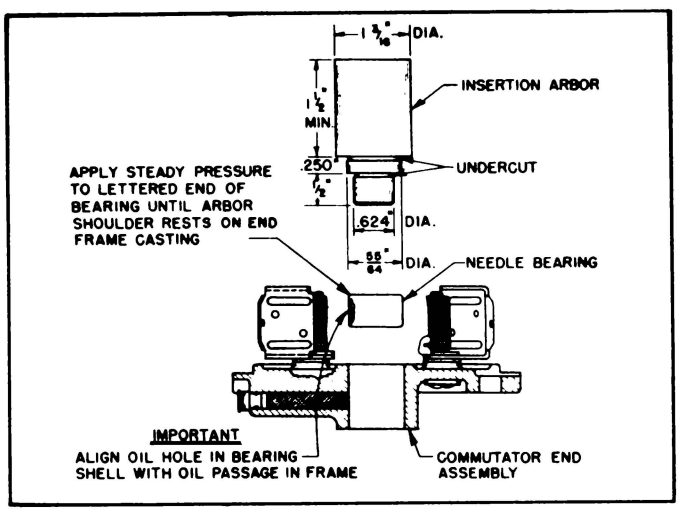
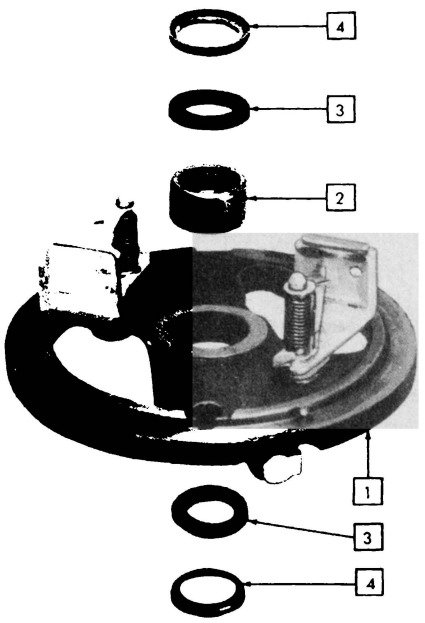


Figure 3—Installing End Bearing.



1. Commutator end frame
2. Needle bearing
3. Felt seal ring
4. Oil seal retainer

Figure 4—Commutator End Bearing Assembly Sequence.

Commutator End Bearing

To replace the needle bearing at the commutator end, insert it in position with the lettered end of the bearing shell next to the insertion arbor, as shown in Figure 3. The oil hole in the bearing shell must be aligned with the oil passage in the commutator end frame. Apply pressure until the insertion arbor is seated against the frame hub. For detail of frame, bearing and seals, see Figure 4.

Checking Inoperative Generator

Several conditions may require removal of the generator from the engine and further checking of the generator. They are:

No output
Unsteady or low output
Excessive output
Noisy generator

No Output

Remove the cover band and check for sticking or worn brushes and burned commutator bars. Burned bars, with other bars fairly clean, indicate open-circuited coils. If the brushes are making good contact with the commutator, and the commutator looks okay, use test leads and light, and check as follows:

1. Raising grounded brush, check with test points from "A" terminal to frame. Bulb should not light. If it does, the generator is grounded; raise other brush from commutator and check field, commutator and brush holder to locate ground.
2. If generator is not grounded check field for open circuit.
3. If the field is not open, check for shorted field. Field draw at 6 volts should be 1.75 to 1.90 amperes. Excessive current draw indicates shorted field.
4. If trouble has not yet been located, remove armature and check on growler for short circuit.

Unsteady or Low Output

Check as follows:

1. Check drive belt tension.
2. Check brush spring tension and brushes for sticking.
3. Inspect commutator for roughness, grease and dirt, dirt in slots, high mica, out of round, burned bars. With any of these conditions, the commutator must be turned down in a lathe and the mica undercut. In addition, with burned bars which indicate open circuit, the open circuit condition must be eliminated or the armature replaced.

Excessive Output

Excessive output usually results from a grounded generator field. The field may be grounded either internally, or in the regulator. Opening the field circuit (disconnecting lead from "F" terminal of regulator of generator) with the generator operating at a medium speed will determine which unit is at fault. If the output drops off, the regulator is causing the condition. If the output remains high, the field is grounded in the generator, either at the pole shoes, leads, or at the "F" terminal.

Noisy Generator

Noise in a generator may be caused by loose mounting or a loose drive pulley; worn, dry or dirty bearings, or improperly seated brushes. (See paragraph on REPLACING COMMUTATOR END BEARING.)

STARTING MOTOR

1949 "600" and "Ambassador 6" Series

Description

The starting motors used in these series are similar except as to size, rated torque and method of lubrication.

The "600" Series starting motor is a Delco-Remy model #1109451 with a no-load-speed of 6000 r.p.m. at 60 amperes and 5.7 volts. It develops a lock torque of 11.5 foot-pounds at **540 amperes and** 3.3 volts.

The "Ambassador 6" Series starting motor is a Delco-Remy model #1107950 with a no-load-speed of 6000 r.p.m. at 60 amperes and 5.0 volts. It develops a lock torque of 16 foot-pounds at 600 amperes and 3.0 volts.

The starting motors for the 1949 Series are four-pole, four-brush units equipped with the Bendix inboard-type drive. When the circuit between the starting motor and the battery is closed for starting, the armature begins to revolve in a clockwise direction as viewed from the drive end. The

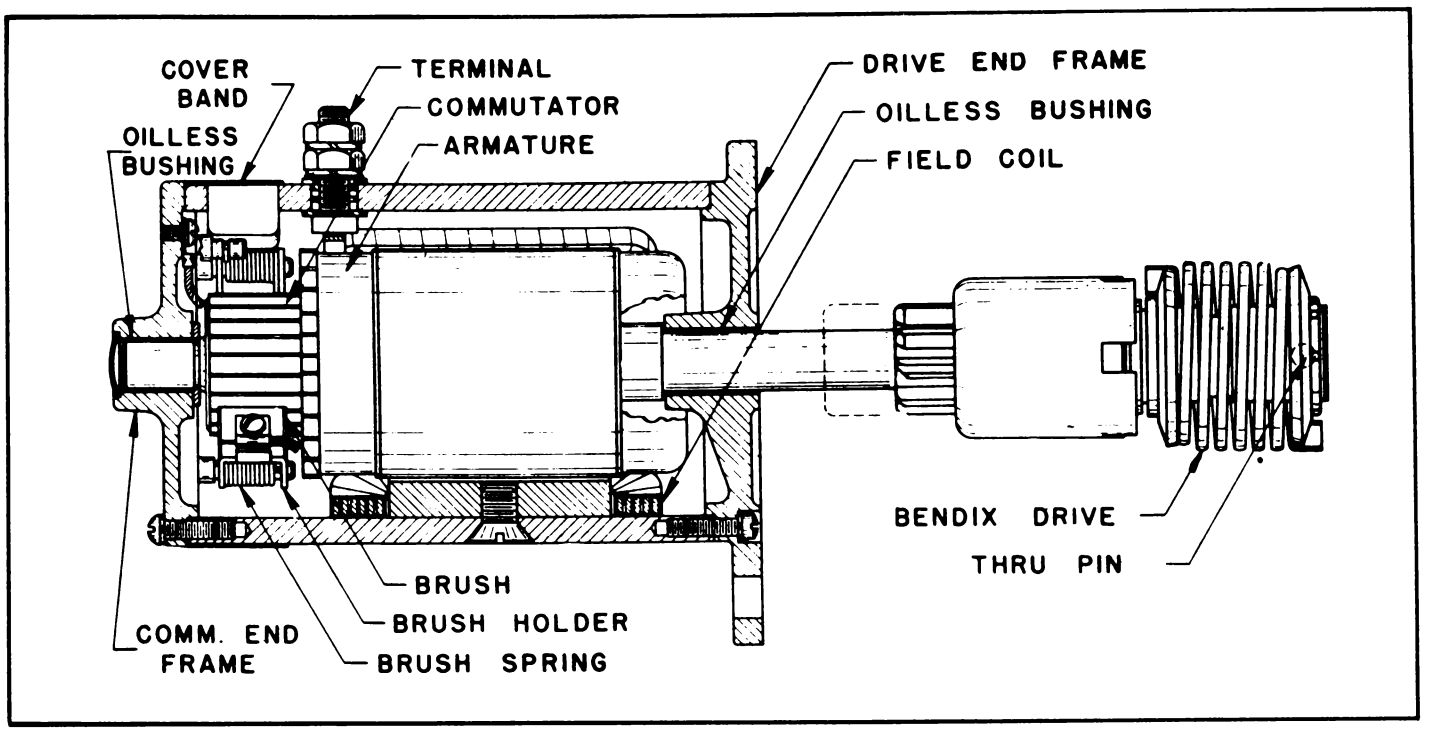


Figure 5—"600" Series Starting Motor.

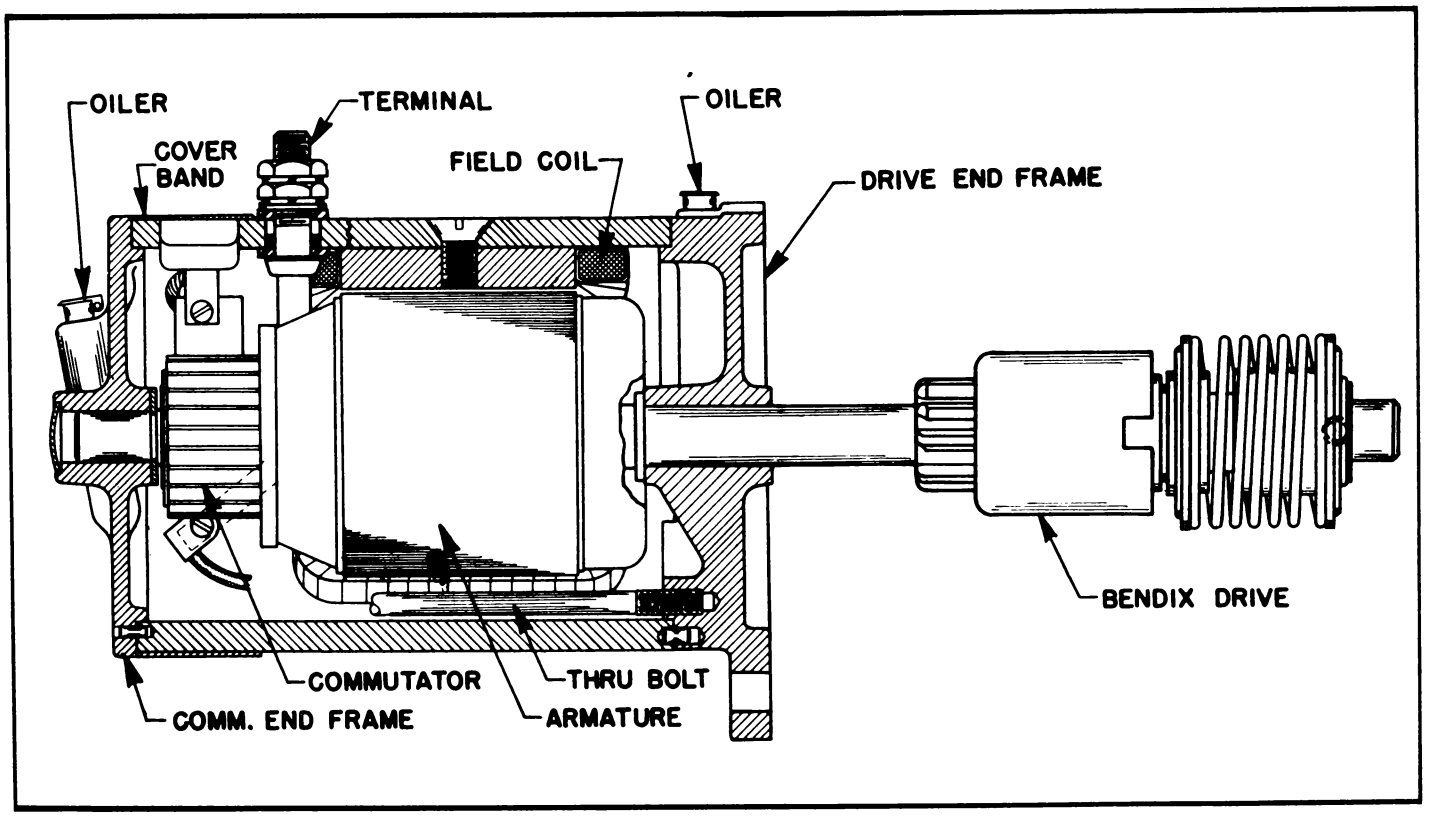


Figure 6—"Ambassador 6" Series Starting Motor.

Bendix gear is mounted on a threaded sleeve which turns within the gear as the armature begins to rotate. This forces the gear endwise along the armature shaft and into mesh with the flywheel. When the engine begins to operate, the flywheel drives the Bendix gear at a higher speed than the threaded sleeve is turning. This causes the gear to return on the sleeve thread, automatically disengaging the gear from the flywheel. The spiral should be kept free from grease and dirt.

Lubrication

The "600" Series starting motor is equipped with oilless bearing bushings in both the commutator and drive ends. Whenever the starting motor is disassembled or removed from the engine, the oilless bearings at each end should be supplied with a few drops of light engine oil.

The "Ambassador 6" Series starting motor is lubricated by hinge cap oilers located at either end of the motor housing. Every 5000 miles, these oilers should be given 8 to 10 drops of light engine oil.

Inspection

All connections should be kept clean and tight and should be checked periodically for voltage drop.

The coverband should be removed and the commutator and brushes inspected at regular intervals.

Commutators which are dirty, gummy or discolored may be cleaned with No. 00 sandpaper. Blow out the dust. *NEVER USE EMERY CLOTH ON COMMUTATORS OR BRUSHES.* If the commutator is rough, out of round or has high mica, it should be turned down in a lathe. (After turning down, always undercut the mica $\frac{1}{32}$" between the bars.)

Brushes should be replaced if worn. If the wear occurs rapidly, check for excessive spring tension and roughness or high mica. The brush spring tension should be 24 to 28 ounces.

Starter Removal

The "600" Series starting motor is easily removed from above, working under the hood. To aid in removal, the shift rods should be disconnected at the shift levers.

The "Ambassador 6" Series starting motor removal is similar to that of the "600" Series except that the shift rods need not be disturbed. It may be easily removed clear of these obstructions.

BATTERY

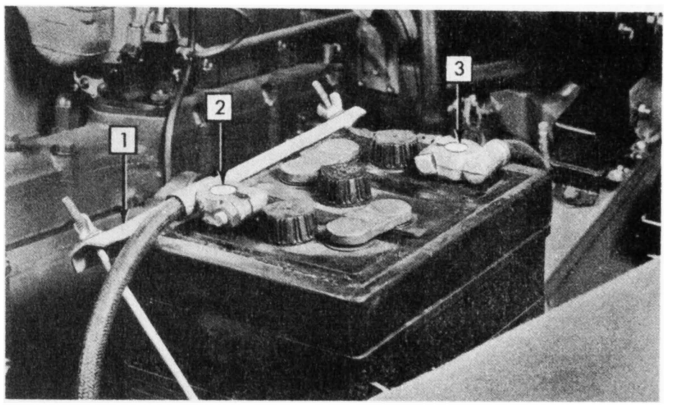
1949 "600" and "Ambassador 6" Series

The batteries for the 1949 Series Nash cars are as follows:

"600" Series—Auto-Lite—CT-1-13
20 Hrs. 90 A.H.
20 Min. 114 Amps.

"Ambassador 6" Series—
Auto-Lite— CT-1-15
20 Hrs. 105 A.H.
20 Min. 133 Amps.

The battery is a three-cell, six-volt unit, with adequate storage capacity for the normal requirements of the car including the approved accessories. It is located under the hood on the left side of the engine compartment (Fig. 7). This location makes it readily accessible for inspection, servicing or removal.



1. Hold-down clamps
2. Positive terminal
3. Negative terminal

Figure 7—Battery Location. ("Ambassador 6" Series Shown.)

CAUTION: *Always install with positive ground.*

Connecting Cables

Use only genuine Nash cables to insure the proper ground connections. Undersize cables reduce starting ability. Always apply vaseline to the hold-down clamp, nuts and terminal connections when the battery is installed.

Servicing of Battery

The battery should be inspected every month or every 1,000 miles. The addition of water, particularly in cold weather, should be made just before operating the car above charging speed. This insures mixture of the water with the acid.

Be sure that the height of the liquid in each cell is not less than $\frac{3}{8}$" and not more than $\frac{1}{2}$" over the tops of the separators.

Battery Testing

At regular intervals each cell of the battery should be tested with a hydrometer. The battery should

register not less than 1.250 specific gravity in climates where freezing occurs, and not less than 1.225 under more moderate conditions.

CAUTION: *When replacing a battery in the carrier, do not tighten the hold-down clamp wing-nuts excessively. It is unnecessary and will cause distortion of the battery case.*

Discharge Causes

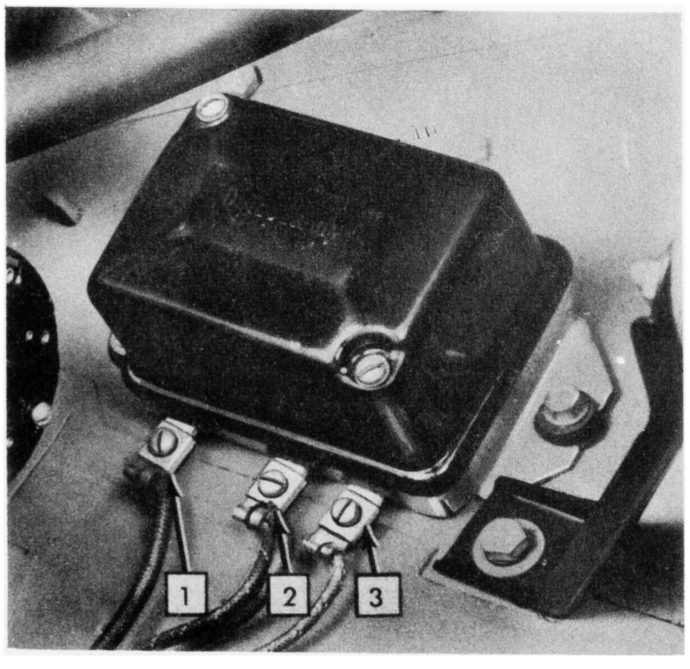
Following are a few of the factors that contribute to the discharge of a battery in use:

1. Improper regulator settings.
2. Oxidized contact points.
3. Loose or corroded battery terminals.
4. Insufficient ground connections.
5. Short circuits in wiring and terminal blocks.

CUT-OUT RELAY, CURRENT AND VOLTAGE REGULATORS

1949 "600" and "Ambassador 6" Series

These three units are all mounted on the same base and enclosed by the same cover, located on the forward side of the dash on the left side of the engine compartment (Fig. 8).



1. Battery lead to cut-out relay
2. Generator armature lead and charge indicator light
3. Generator field

Figure 8—Current and Voltage Regulator Wire Connections.

CAUTION: *This regulator assembly may be used only with a* POSITIVE GROUNDED BATTERY.

This regulator assembly performs the following functions:

1. Opens and closes the generator and battery circuit.
2. Limits generator output to the requirements of battery charge and electrical load.
3. Limits generator voltage to a specific maximum.

Basically, these units are electromagnets which perform the above functions by opening and closing contact points against spring tension, in response to variations of the current and voltage impressed upon them (Figs. 9 and 10).

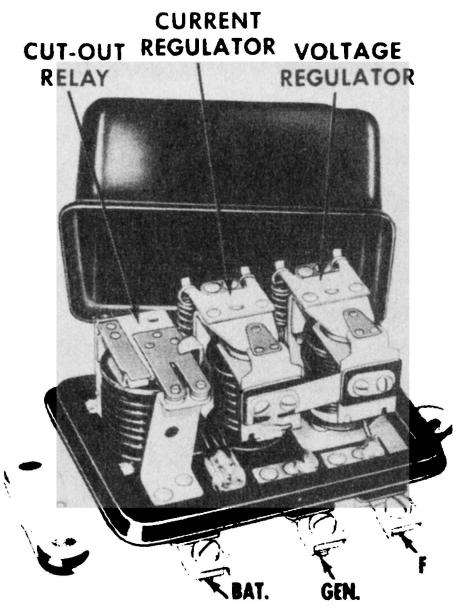


Figure 9—Current and Voltage Regulators.

CUT-OUT RELAY

Description

The cut-out relay acts as a circuit breaker which opens and closes the circuit between the generator and the battery. At low engine r.p.m. the generator output is not great enough to carry the load. At this time, the cut-out relay is open, so that the battery is carrying the electrical load, and is prevented from discharging through the generator windings. When the generator speed is increased enough to bring its output voltage up to the cut-out setting (6.2 to 6.7 volts), the cut-out relay closes and the generator carries the load and recharges the battery. The cut-out relay is the unit to the left and nearest to the "BAT" terminal on the regulator (Fig. 9).

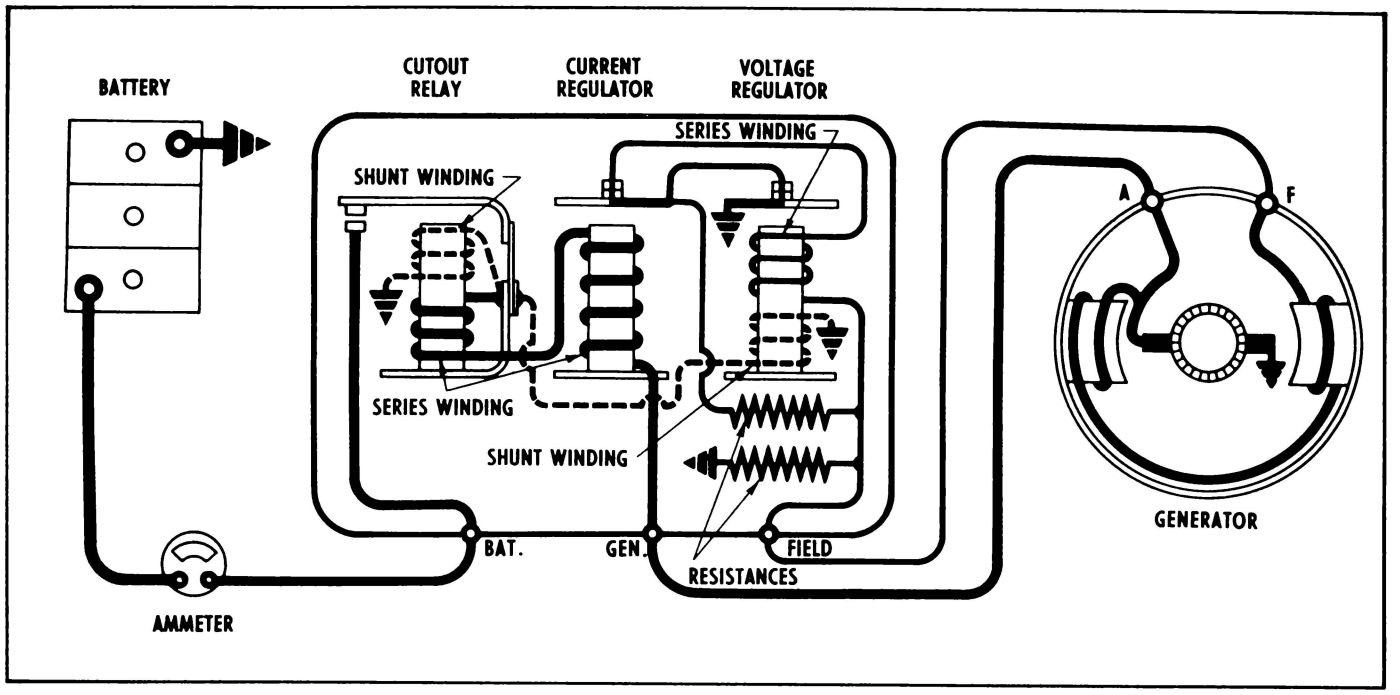


Figure 10—Schematic Drawing of Charging Circuit.

Air Gap Adjustment

Air gap should be measured with the regulator disconnected. With both contact points closed, the air gap should measure .020" between the center of the winding core and the armature. If both sets of points do not meet at the same time, bend the spring fingers until they do. To adjust the air gap, loosen the two adjusting screws and raise or lower the armature as required (Fig. 11).

Point Opening

Point opening should be .020". It is adjusted by bending the upper armature stop (Fig. 12).

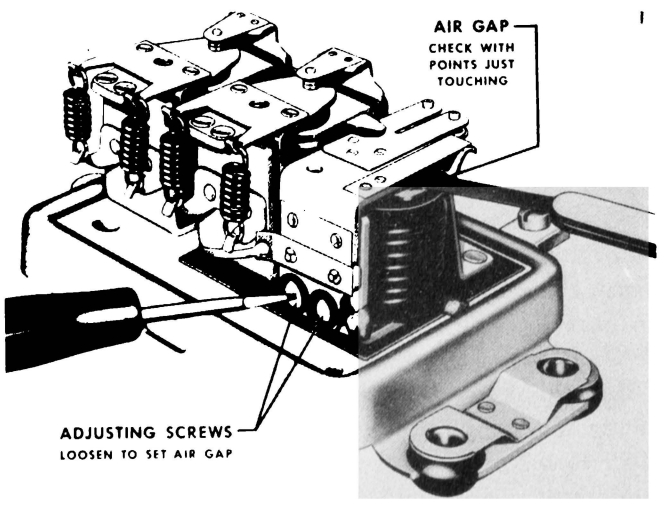


Figure 11—Cut-out Relay Air Gap Adjustment.

Figure 12—Cut-out Relay Point Opening Adjustment.

Closing Voltage

Closing voltage should be 6.2 to 6.7 volts. It is adjusted by bending the armature spring post down to decrease the spring tension and the closing voltage, or up to increase the spring tension and the closing voltage (Fig. 13).

To check the closing voltage, connect an ammeter and a voltmeter as illustrated in Figure 14. Slowly increase the generator speed until the points close. If adjustment is required, disconnect the regulator and change the spring tension.

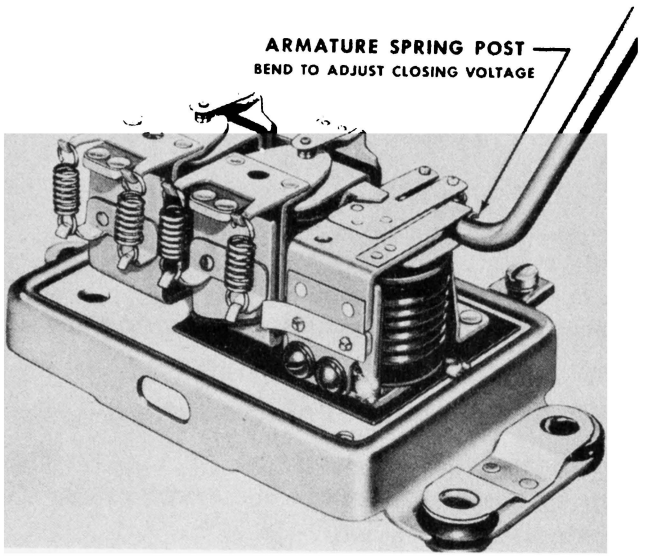


Figure 13—Cut-out Relay Closing Voltage Adjustment.

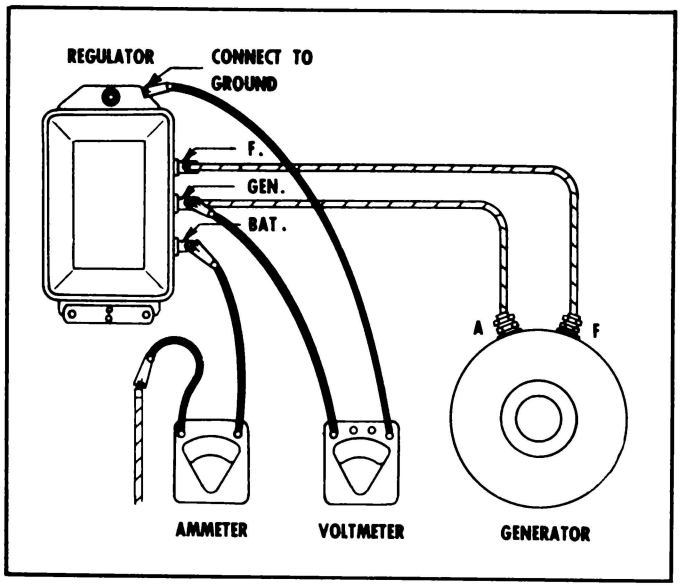


Figure 14—Meter Connections to Check Cut-out Relay.

CURRENT REGULATOR

Description

The current regulator is the middle unit in the regulator assembly (Fig. 9). It is the current limiting device which prevents the generator output from exceeding a safe value. It is set to operate at 32 to 34 amperes at operating temperature. When the generator output reaches this value, the current regulator points open. This causes the generator field current to flow through a resistance, weakening the field and decreasing the generator output. When the electrical load is high, this cycle repeats itself very rapidly, limiting the generator maximum output to a constant value.

Air Gap

The current regulator air gap should be .080", measured between the center of the winding core and the armature with the points just closing. To check, disconnect the regulator. Open the points by hand, release the armature slowly until the points touch, then measure the air gap. To adjust, loosen the two contact mounting screws and raise or lower the contact bracket as required.

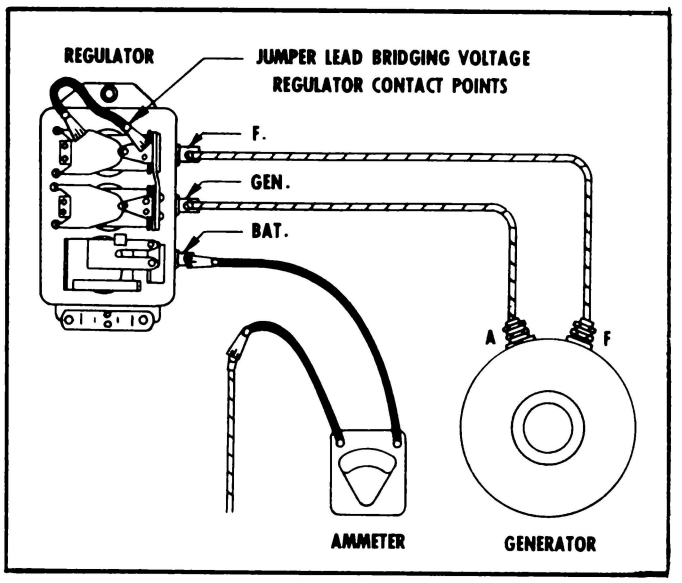


Figure 15—Ammeter Connections for Checking Current Setting.

Current Regulator—Current Setting

Current setting should be 32 to 34 amperes with the regulator at operating temperature.

Check the setting by connecting a test ammeter in the circuit (Fig. 15). Remove the regulator cover and connect a jumper lead across the voltage regulator contact points as shown. With the regulator at operating temperature, turn on the lights and accessories, run the generator at medium speed and read the current setting from the ammeter. Adjust by bending the spring hanger of one spring *up* to decrease the current setting or *down* to increase the current setting. Adjustment should be confined to one spring unless the regulator is completely out of adjustment.

For complete adjustment, remove one spring and adjust the other to one-half the specified setting. Replace the second spring and complete the adjustment on the hanger of this spring to the full current setting. This insures that each spring will carry one-half the total required tension. This adjustment is similar to that shown for the voltage regulator in Figure 16.

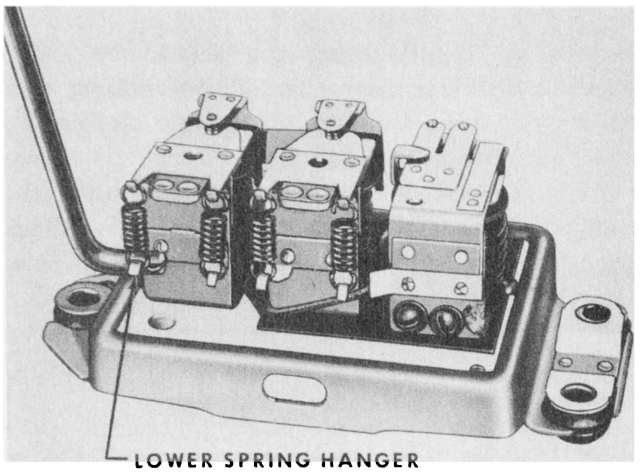


Figure 16—Current and Voltage Adjustment.

VOLTAGE REGULATOR

Description

The voltage regulator is the right hand unit in the regulator assembly (Fig. 9). It is the voltage limiting device which operates to prevent the generator voltage from exceeding a safe value. The limiting voltage should be 7.2 to 7.4 volts with the regulator warmed to operating temperature. When the circuit voltage reaches the setting value, the contact points open and the generator field current is made to flow through a resistance. This weakens the field strength and reduces the generator output. Reduction of output weakens the magnetic field in the core of the regulator winding, and the contact points again close. The cycle repeats itself very rapidly (150 to 250 times per second) and holds the voltage developed to a constant maximum, as determined by the setting.

Voltage Regulator—Air Gap

The voltage regular air gap should be .070". It is checked and adjusted in the same manner as the current regulator unit (Fig. 17).

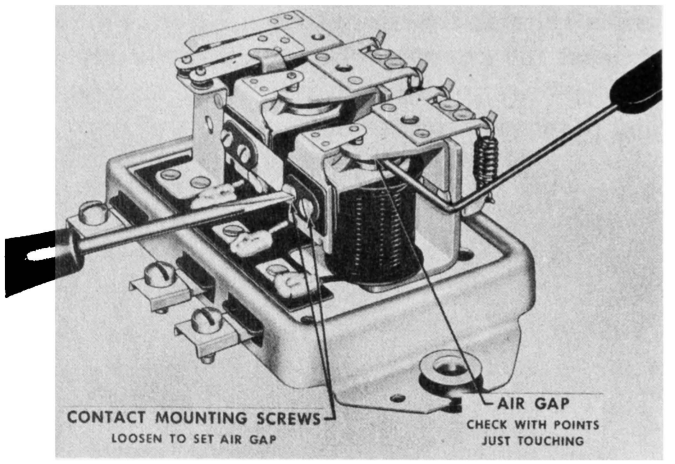


Figure 17—Voltage Regulator Air Gap Adjustment.

Voltage Regulator—Voltage Setting

The voltage setting should be 7.2 to 7.4 volts. It may be checked by either the FIXED or the VARIABLE resistance method.

Using the first method, connect a voltmeter and a fixed resistance as shown in Figure 18. Do not remove the regulator cover. Increase the generator speed slowly until the maximum voltage reading is obtained.

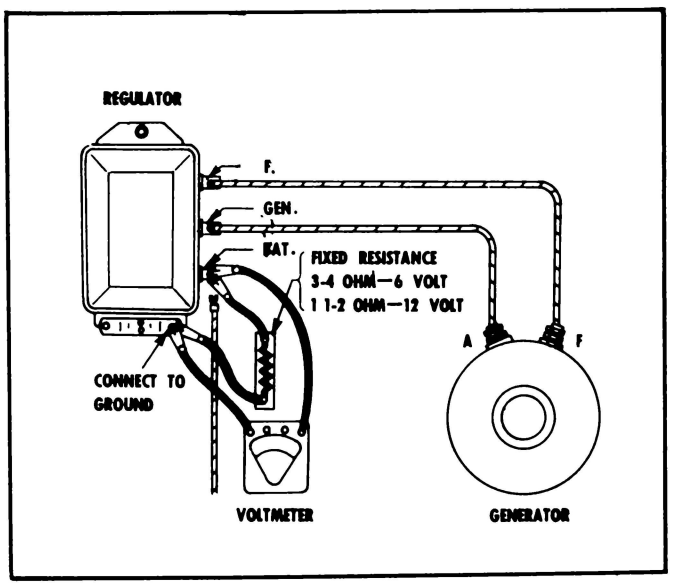


Figure 18—Fixed Resistance Method of Checking Voltage Regulator.

To adjust, remove the cover and bend one spring hanger *down* to increase the voltage setting or *up* to lower the voltage setting. Confine adjustment to one spring unless the regulator is completely out of adjustment.

For complete adjustment, remove one spring and connect the voltmeter and fixed resistance (Fig. 18). Open the regulator points by hand and slowly increase generator speed until 6 volts are obtained. (This establishes the approximate generator speed at which the actual adjustment is to be made.)

Allow the contact points to close and adjust the spring tension to one-half the total voltage setting. Install the second spring and complete adjustment without again touching the first spring (Fig. 16).

To check the adjustment after each change of setting, replace the regulator cover, reduce speed until the relay points open, and then increase the generator speed until the maximum voltage is obtained.

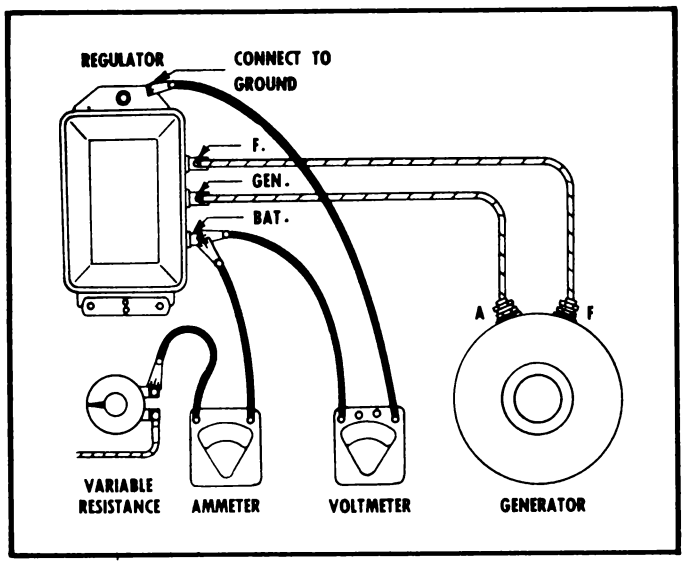


Figure 19—Variable Resistance Method of Checking Voltage Regulator.

If using the *variable* resistance method, connect voltmeter, ammeter and variable resistance, as shown in Figure 19. Operate the generator at medium speed. If less than eight amperes are obtained, turn on the lights. This will increase the current flow. Cut in the variable resistance until the output is reduced to 8 to 10 amperes. Reduce generator speed until the relay points open, then increase speed until output is 10 amperes. VOLTAGE READINGS MUST BE TAKEN WITH THE REGULATOR HOT AND 8 TO 10 AMPERES MUST BE FLOWING IN THE LINE.

After each voltage adjustment, readjust the variable resistance to return the output to the 8 to 10 ampere value. Always reduce generator speed until relay points open, then bring generator back to speed before taking reading.

CAUTION: *The cover must be on the regulator when taking readings or when the unit is being heated by operation prior to taking readings. This is necessary because the cover forms part of the magnetic field and also helps to retain the heat.*

Cleaning Contact Points

Dirty or oxidized contact points arc and burn, causing reduced generator output and run-down batteries. If the points are properly cleaned, the regulator will be restored to normal operation. If improperly cleaned, the improvement in performance will be small and only temporary.

Clean the points one at a time, using a spoon or riffler file (Fig. 20). Loosen the two upper contact mounting screws and remove the upper bracket. When replacing, adjust the air gap.

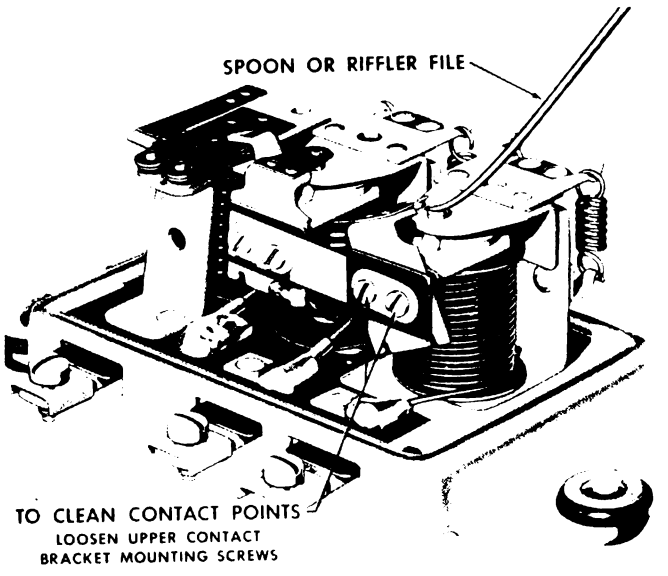


Figure 20—Cleaning Contact Points.

Radio By-Pass Condensers

The installation of radio by-pass condensers on the field terminal of the regulator or generator will cause the current and voltage regulator contacts to oxidize. Oxidized points cause a high resistance and may result in a low charging rate and a discharged battery. DO NOT CONNECT RADIO BY-PASS CONDENSERS TO THE FIELD TERMINAL OF THE REGULATOR OR GENERATOR. If a condenser has been installed on the field terminal, disconnect the condenser and clean the contact points of both the current and the voltage regulator.

Reversed Polarity

If the polarity of the generator is reversed, the cut-out relay contact points will vibrate and burn. To make sure the generator has the correct polarity, after reconnecting the regulator, momentarily connect a jumper lead between the "GEN" and "BAT" terminals BEFORE STARTING THE ENGINE. The momentary surge of battery current to the generator will correctly polarize the generator.

IGNITION SYSTEM

1949 "600" and "Ambassador 6" Series

Description

The ignition system consists of the ignition coil, condenser, distributor, high tension wiring, spark plugs, ignition switch and a source of electrical energy—the battery or generator. There are two circuits in the ignition system. The primary circuit includes the source of electrical energy, the distributor contact points, the condenser and the primary winding of the ignition coil. The secondary circuit includes the secondary winding of the ignition coil, the rotor and distributor cap, the high tension wiring and spark plugs.

The primary circuit is completed and broken by the circuit breaker mechanism of the distributor, causing a build-up and collapse of a magnetic field in the ignition coil. The condenser is connected across the distributor contact points. When the points open, the current tries to continue flowing. Without the condenser, the current would form an arc across the separating points. The condenser prevents this because it has the ability or capacity to store up electrical energy. The current, instead of forming an arc, flows into the condenser. Therefore, the condenser brings the current flow to a quick stop. This causes the magnetic field in the coil, sustained by the current flow, to collapse quickly. It is this quick collapse of the magnetic field which induces the high voltage in the secondary coil windings. The high voltage is distributed to the correct cylinder spark plug wire by means of the rotor and distributor cap.

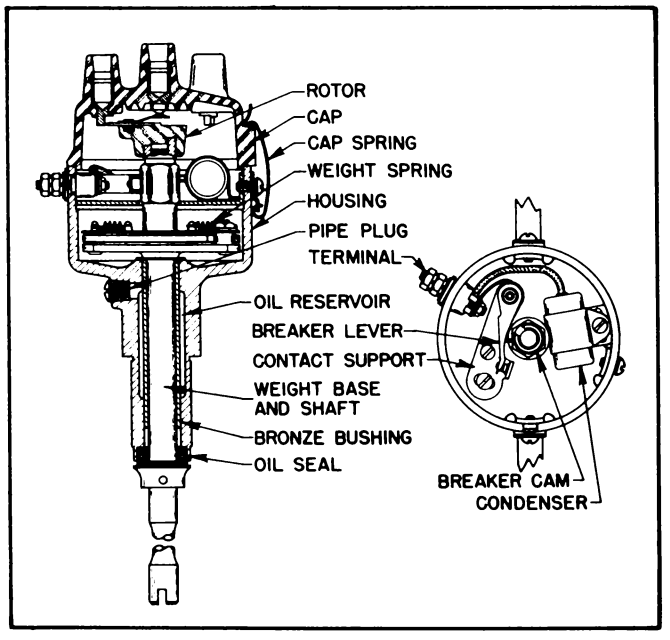


Figure 21—"600" Series Distributor.

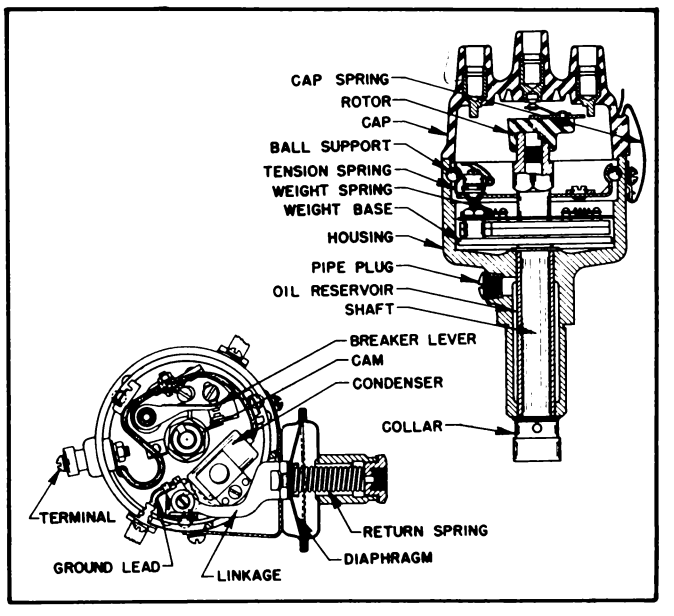


Figure 22—"Ambassador 6" Series Distributor.

Specifications:

Make	Delco-Remy
Model	1112351
Rotation	Counter-clockwise
Cam Angle	35°
Contact Point Gap	.018-.024
Contact Spring Tension	17 to 21 ounces
Condenser Capacity	.18-.23 Mfd.

Specifications:

Make	Delco-Remy
Model	1110216
Rotation	Clockwise
Cam Angle	35°
Contact Point Gap	.018-.024
Contact Spring Tension	17 to 21 ounces
Condenser Capacity	.18-.23 Mfd.

Spark Control

Advancing and retarding of the spark for varying conditions of speed and load is accomplished by: (1) a centrifugal advance mechanism (governor weights) on the distributor shaft which advances the contact breaker cam; and (2) a vacuum control mechanism which, actuated by the manifold vacuum, either rotates the distributor in its mounting, or rotates a movable breaker point plate.

Centrifugal Control

With speed variations, it is desirable to advance the spark in direct relation to the engine speed in order to develop maximum power (Fig. 23).

As engine speed increases, the weights gradually throw out and advance the cam assembly to give the desired spark advance for the speed at which the engine is running. The correct centrifugal spark advance is determined by various specified throttle tests, until the maximum is obtained, as shown in Figures 25 and 26. Weights, cam contour, and spring calibration to give this advance may then be corrected by adjustment or replacement.

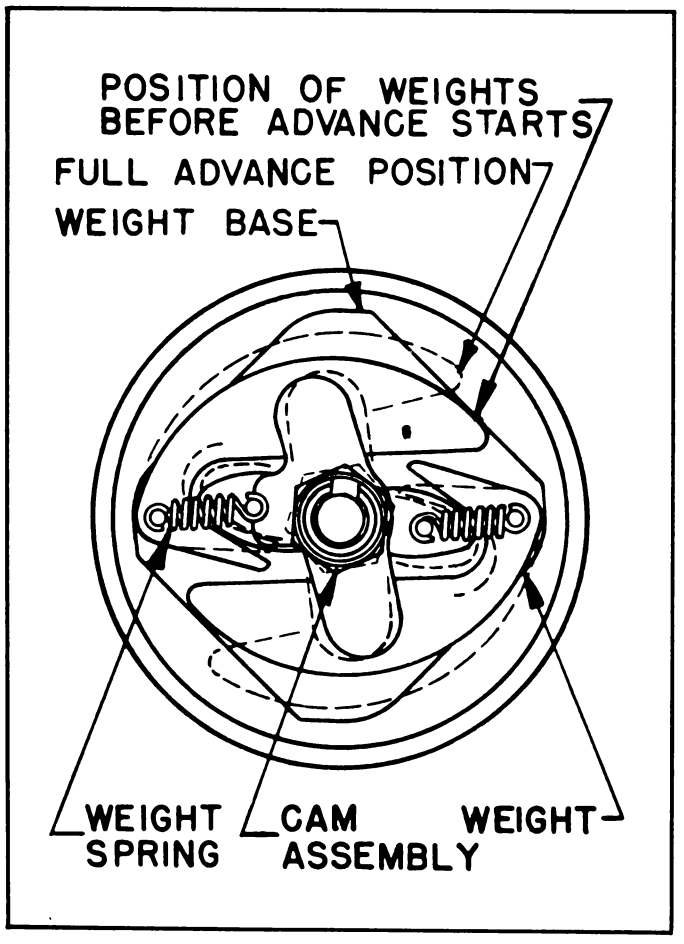


Figure 23—Centrifugal Advance Mechanism.

Vacuum Control

Under part throttle operation, additional spark advance is desirable for improved performance and fuel economy. The vacuum control (Fig. 24) consists essentially of a diaphragm and linkage acting against a return spring. The linkage is riveted to the diaphragm at one end and clamped about the distributor stem at the other end. The vacuum tube from the vacuum control enters the carburetor just back of the throttle. As soon as the throttle is opened, the manifold vacuum is admitted to the carburetor and the vacuum control diaphragm is caused to collapse in proportion to the vacuum. The linkage between the diaphragm and the distributor stem is drawn into the vacuum unit, causing the distributor to rotate in its mounting to secure vacuum advance.

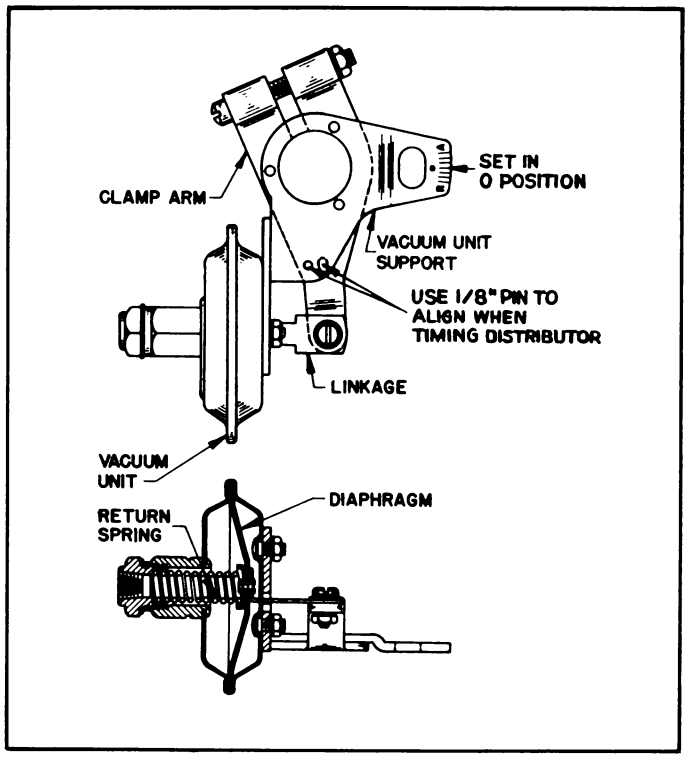


Figure 24—Distributor Vacuum Control. ("600" Series Shown.)

The total spark advance for any condition of engine speed is determined by the two advance mechanisms, acting together and depending on the throttle opening and load. When the throttle is closed, there is no vacuum advance, all advance being secured by the centrifugal advance mechanism. As the throttle is gradually opened, the additional advance is caused by the vacuum mechanism. The total advance is the sum of the centrifugal plus the vacuum advance. With wide open throttle,

the vacuum drops off, and all advance is obtained by the centrifugal advance mechanism.

The "600" Series is equipped with an external vacuum spark control unit which rotates the entire distributor in its mounting pad to the correct advance for the existing vacuum (Fig. 25). Its main function is to retard ignition upon quick acceleration or under heavy load to prevent ignition ping. The vacuum to actuate this unit is obtained from a port slightly toward the intake manifold from the carburetor throttle butterfly seat.

The "Ambassador 6" Series vacuum control differs only in its location. It is mounted on the side of the distributor with a connecting link to a movable breaker point plate (mounted on three steel balls) inside the distributor housing (Fig. 26).

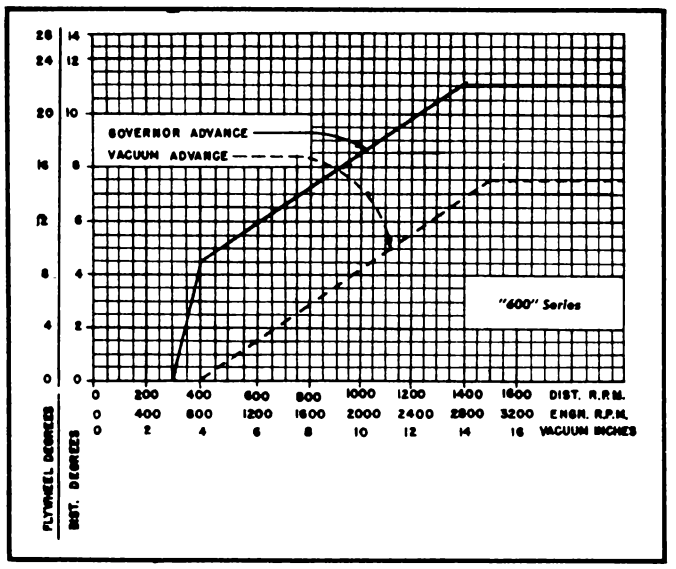


Figure 25—"600" Series Spark Advance Curve.

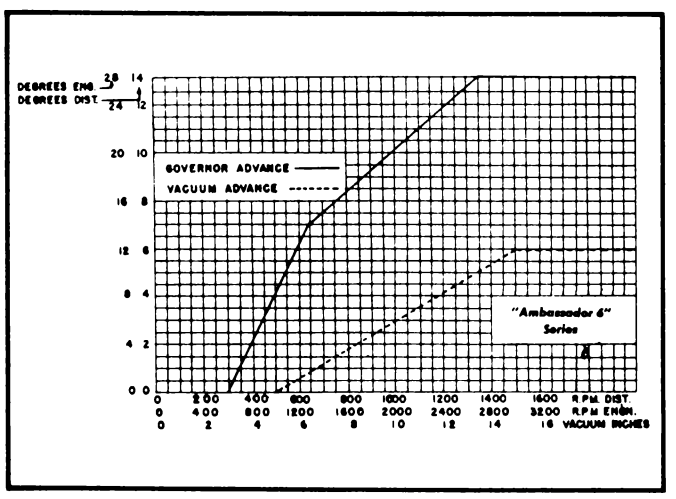


Figure 26—"Ambassador 6" Series Spark Advance Curve.

Distributor Maintenance

Every 5000 miles place one drop of light engine oil on the breaker lever pivot and a few drops on the felt wick under the rotor.

In addition, the "Ambassador 6" Series distributor requires one drop of oil on each of the three balls supporting the breaker plate.

Inspection

The cap should be removed at regular intervals and the contact points, rotor and cap examined. Check high tension wiring for frayed or damaged insulation and poor connections at the cap or plugs. Replace the cap or rotor if they are cracked or show carbonized paths. The paths indicate that the secondary current has been leaking to ground over the surface of the material.

Contact points that are burned or pitted should be replaced or dressed with a clean, fine-cut contact file. Never use emery cloth to clean contact points. Contact surfaces, after considerable use, may not appear bright and smooth, but this is not necessarily an indication that they are not functioning properly.

Oxidized contact points may be caused by high resistance or loose connections in the condenser circuit, oil or dirt on the contact surfaces or, most commonly, high voltages. Check for these conditions when burned contacts are found.

Contact point gap must be set to specifications. Points set too closely tend to burn and pit rapidly. Points with excessive separation tend to cause a weak spark at high speed.

Cam or contact angle is the angle in degrees of cam rotation through which the points remain closed. This angle increases with decreased point opening. As the rubbing block of a new breaker arm wears in, the contact angle increases. Therefore, with a new arm, the contact angle is at least one degree less than with an arm worn by several thouand miles of operation.

Contact spring tension must be between 17 and 21 ounces. Weak tension will cause point chatter and ignition miss at high speed. Excessive tension will cause wear of the contact points, cam and rubbing block.

Condenser

Four factors affect condenser performance and each must be considered in making a complete test:

1. Breakdown—a direct short through the insulation between the metallic elements of the condenser.
2. Low insulation resistance. This causes leakage of the charge from one metallic element to the other. A condenser with this condition is said to be weak since it cannot hold a charge.
3. High series resistance—excessive resistance in the condenser circuit due to loose connections, broken strands in leads, etc. This will cause burned contacts, which in turn, result in ignition failure on starting and at high speed.
4. Condenser capacity—determined by the area of the metallic elements and the insulating and impregnating materials.

IGNITION TIMING

1949 "600" and "Ambassador 6" Series

Timing of the distributor to the engine should be made in accordance with specifications. (See Distributor Specifications.) Before the timing is made, the ⅛" holes in the clamp arm and the support should be aligned with a ⅛" pin (Fig. 24).

Ignition timing is obtained by firing No. 1 Cylinder with the piston on T.D.C. compression stroke.

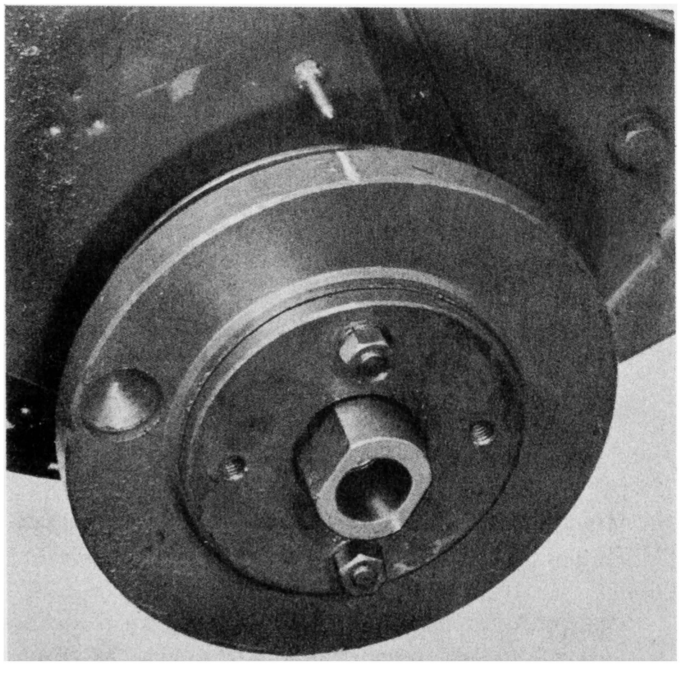


Figure 27—Timing Mark Location.

To facilitate timing, a T.D.C. mark is milled on the outer circumference of the vibration dampener pulley. The use of a neon timing light is recommended.

Position #1 piston in firing position. Locate the distributor by rotating it in its mounting so that the points are just about to separate. The distributor rotor now points to the position of the #1 cylinder contact in the distributor cap. Arrange the spark plug wires in the cap to the proper firing order, 1-5-3-6-2-4, with rotor rotation counter-clockwise in the "600" Series and clockwise in the "Ambassador 6" Series. Start the engine and time accurately with the neon timing light (Fig. 27).

IGNITION COILS

Ignition coils do not require special service other than the keeping of terminals and connections clean and tight. Coils having a resistance unit will not operate if the resistance unit is open-circuited. In case of failure in the windings, it is necessary to replace the complete coil.

SPARK PLUGS

The "600" Series uses the 14 mm. plug A-5.

The "Ambassador 6" Series uses the 14 mm. plug AC-44.

Inspection

The spark plugs should be removed periodically from the engine and examined for burned electrodes and dirty, fouled, cracked or broken porcelains (Fig. 28).

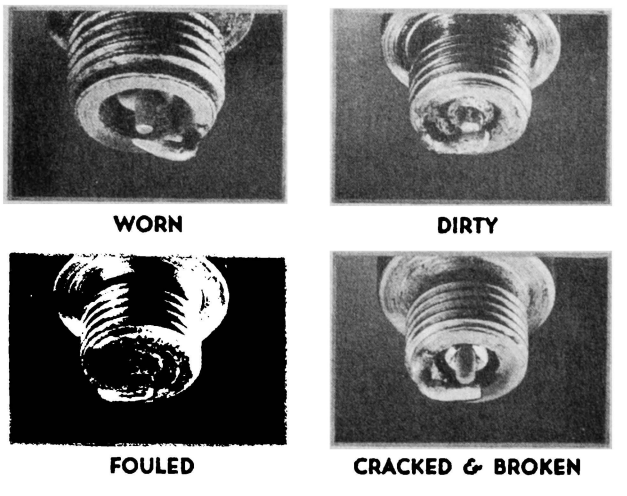


Figure 28—Spark Plugs Often Indicate Other Sources of Trouble.

The gaps should be checked, set, and rechecked with an adjusting tool and gauge (Fig. 29). The recommended gap setting is .025".

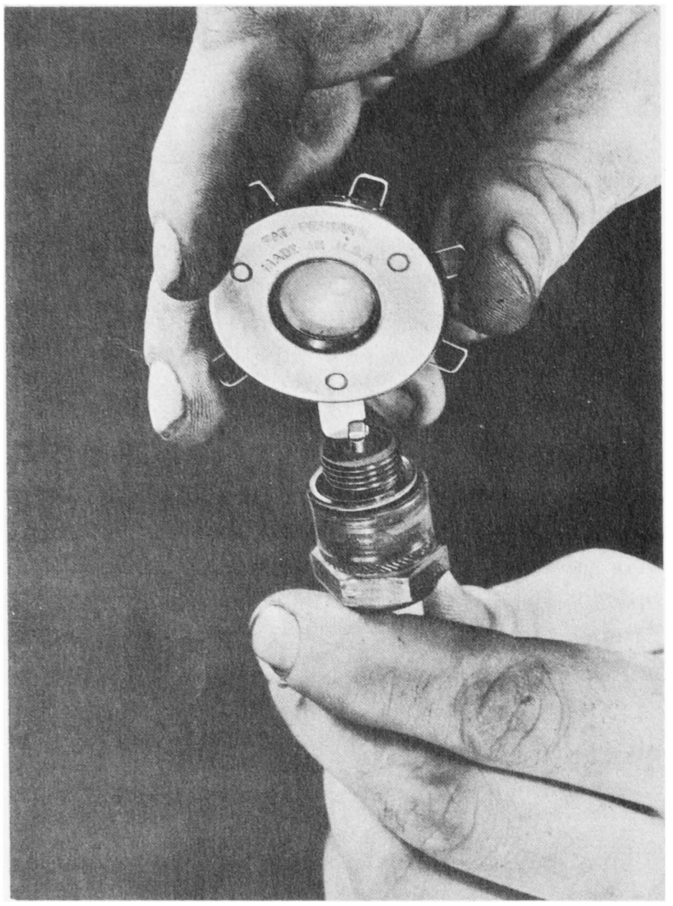


Figure 29—Set Gap to .025".

CAUTION: *When installing plugs, always use new plug gaskets. They aid in dissipating heat and also insure compression and power expansion pressure seal.*

Always use a torque wrench when installing plugs. Distortion from over-tightening will change the gap clearance of the plug. Proper wrench torque for the 14 mm. plugs in the 1949 Series is 30 foot-pounds.

IGNITION SWITCH AND MOUNTING BRACKET ASSEMBLY REMOVAL

To remove this assembly, first remove the steering wheel. Then the mounting bracket retaining bolt can be removed, allowing the assembly to be pulled out of the jacket tube (Fig. 30).

By removing the wires from the terminals, and removing the small set screw the switch can be replaced.

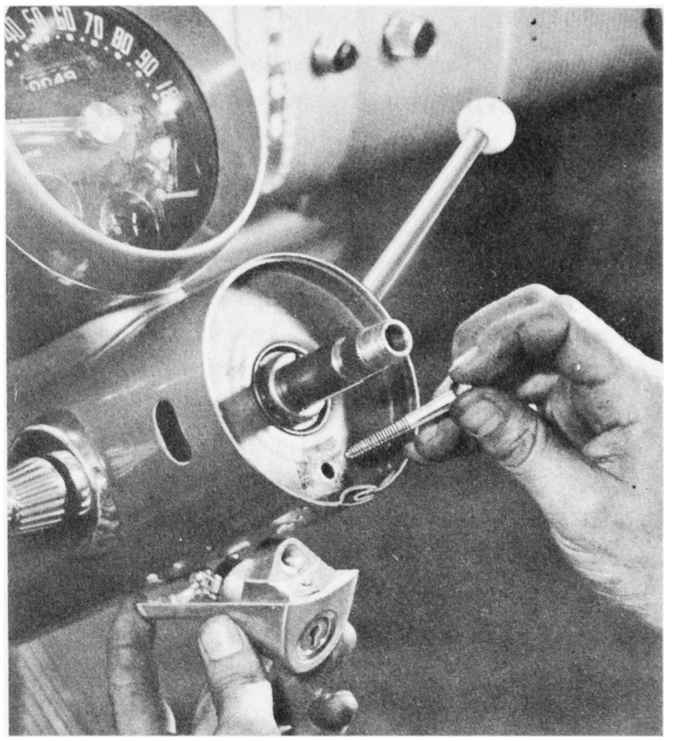
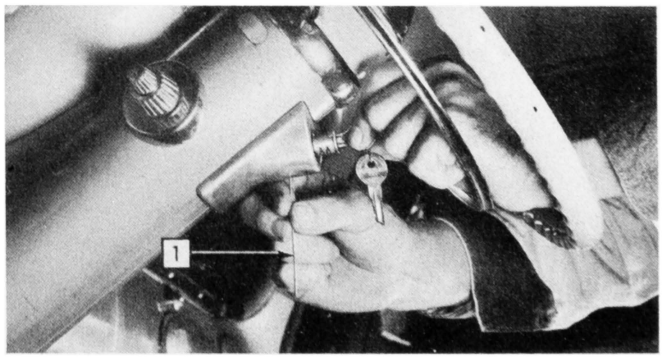


Figure 30—Removing the Ignition Switch Assembly.

IGNITION LOCK CYLINDER REMOVAL

To remove and replace the ignition lock cylinder, insert a piece of stiff wire (a paper clip will do) into the small hole provided for this purpose in the bottom of the ignition switch housing. Turn the ignition key to the extreme left (counter-clockwise). With the wire (Fig. 31), depress the spring-loaded horseshoe lock until the cylinder is free for removal (Fig. 31).



1. Wire

Figure 31—Inserting Wire to Depress Horseshoe Lock and Removing Ignition Lock Cylinder.

The cylinder is held in the housing by a spring-loaded horseshoe lock which snaps into a groove cut in the switch housing to retain the cylinder (Fig. 31).

INSTRUMENT CLUSTER GAUGES

1949 "600" and "Ambassador 6" Series

The instrument cluster housing is conveniently mounted on top of the steering post jacket tube beneath the steering wheel (Fig. 33). In addition to the speedometer, it contains the panel light, beam indicator light, charge indicator light, and electric gauge receiver units for oil pressure, water temperature and fuel level (Fig. 32).

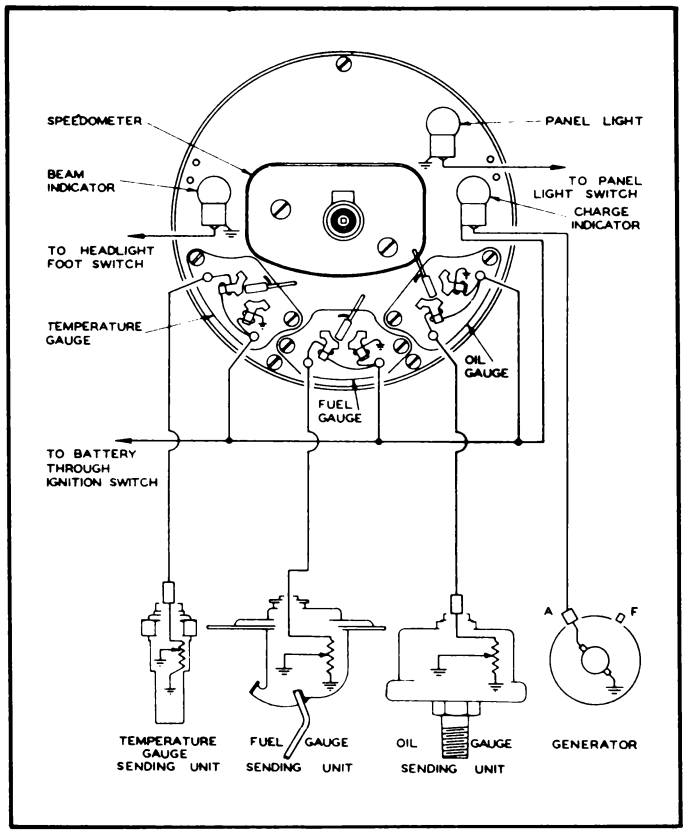


Figure 32—Instrument Cluster Gauges Wiring Diagram.

Instrument Light

The instrument light illuminates the face of the instrument cluster for night driving. It is turned on by the small knob on the light switch under the steering wheel. In order to operate, the headlight switch must be turned on in the parking or drive position.

Beam Indicator Light

This light is connected to the high beam circuit in the headlight foot switch. When the high beam is operating in the head lamps, a red light dot is seen on the right side of the cluster face.

Charge Indicator Light

Instead of the conventional ammeter, a light is used to indicate general generator operation. When the output of the generator is below battery potential, a red light dot is seen on the left hand side of the instrument cluster face. When the generator output is above battery potential, other factors (wiring, voltage regulator, etc.) being normal, the light is out.

The charge indicator bulb is in an insulated socket, and is connected to the charging circuit, obtaining its ground through the voltage regulator when the generator output is below battery potential. As soon as generator output rises above battery potential, the current flow from the generator reverses the direction of flow in the charging circuit and the light goes out. At this time, the charge indicator light no longer obtains a ground through the voltage regulator.

Electric Gauges

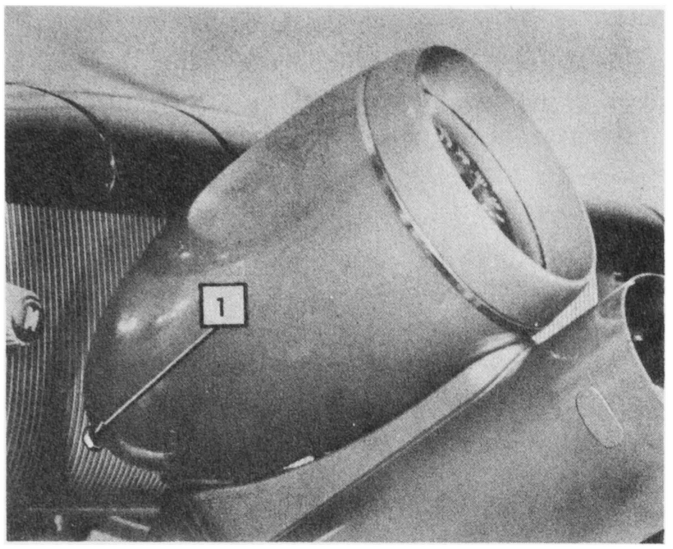
The gauge receiver units are of the magnetic type, using a variable magnetic field in balanced coils to deflect the indicator needle armatures. The pointers of the needle armatures indicate existing coolant temperature, oil pressure, or fuel level. The gauge sending units are located in (1) the cylinder head (temperature), (2) the oil pressure channel (oil pressure) and (3) the fuel tank (fuel level). They are simply rheostats or variable resistors which vary the current flow through each needle-deflecting coil, causing the needle to indicate accordingly.

These units may be tested but cannot be repaired in the field. When one fails to function properly, it is necessary only to replace it. Gauges can be removed separately and replaced. Each is held in the cluster plate by two mounting screws.

To replace a gauge, remove the instrument cluster head from its housing. This is done by removing the instrument cluster retaining bolt from the back of the cluster housing (Fig. 33).

CAUTION: *Whenever any work is to be performed on the instrument cluster, speedometer, ignition switch, or horn blower, disconnect one battery lead at the battery terminal.*

If removing more than one wire in the gauge cluster, each wire should be labeled with its location as it is removed. This will insure proper re-wiring.



1. Instrument cluster retaining bolt

Figure 33—Instrument Cluster.

After removing the instrument cluster retaining bolt, the cluster can be pulled out of the housing far enough to disconnect the speedometer cable. Then the cluster head can be removed for access to gauges and bulbs, as shown in Figure 34.

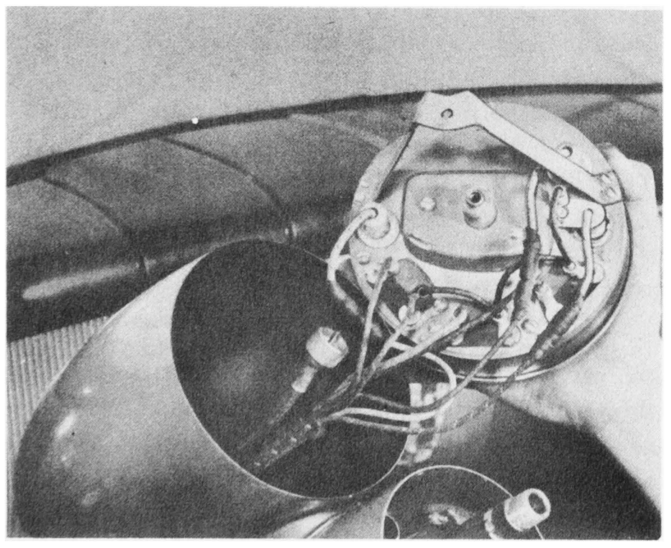


Figure 34—Instrument Cluster Head Removed from Cluster Housing.

Testing Gauge Units

In testing a gauge unit, the use of a checked and calibrated test unit is recommended.

First, disconnect the dash lead of the suspected unit. Then, the test unit (preferably a good tank unit) is substituted for the sending unit of the suspected gauge. With two shunt leads, one to ground the test unit, the other to connect the test unit to the terminal of the suspected dash unit, insert the test unit in the circuit.

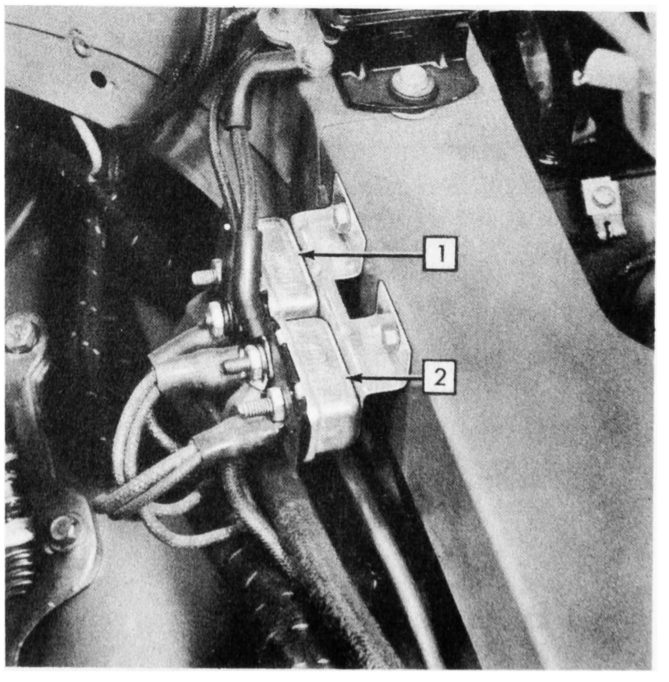
With the ignition switch on and the test unit float in the full tank position, the needle on the dash unit should indicate the full scale reading (high temperature, high oil pressure or full tank).

If the dash unit needle reads high scale at all times, check for grounded wiring to the sending unit, shorted or burned out sending unit, or reversed wiring on the dash unit. If the dash unit needle reads low scale at all times, check for open circuit to the sending unit, open circuit in the sending unit, or failure of the ignition switch circuit to energize the gauge units.

NOTE: *For complete disassembly of the instrument cluster, see the SPEEDOMETER section.*

CIRCUIT BREAKERS

Instead of fuses, circuit breakers are provided to protect the main electrical wiring from overload. These consist of one 15 ampere circuit breaker (ignition switch, heater motors and stop light) and one 30 ampere circuit breaker (main lighting circuit). They are located beneath the hood on the left side in the engine compartment (Fig. 35).



1. 15 ampere circuit breaker
2. 30 ampere circuit breaker

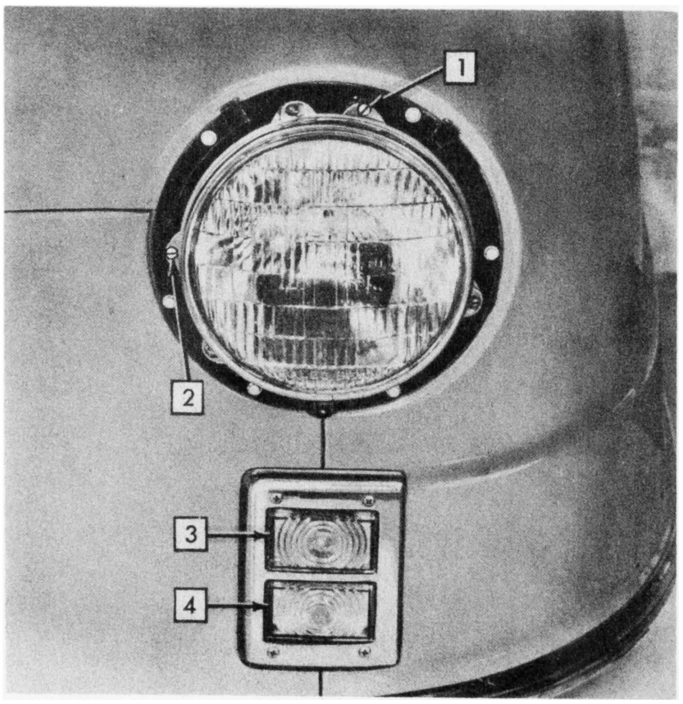
Figure 35—Circuit Breaker Location.

The circuit breakers are of the bi-metal vibrating type. When an overload occurs in the circuit, the bi-metal strip heats up and bends, separating the contact points. This opens the circuit. With the circuit open, the bi-metal strip cools, the circuit is closed and the cycle repeated.

A short circuit is indicated by intermittent operation of the unit which is shorted. For example, if the headlamps are shorted, they go on and off intermittently when turned on separately. Other circuits may be checked similarly.

HEAD LAMPS

The head lamps are of the familiar sealed-beam type. Adjustment of beam direction may be made to agree with existing State regulations by the method outlined below. For access to the adjustment screws on each sealed beam, it is only necessary to remove the head lamp door (Fig. 36).



1. Vertical adjustment
2. Horizontal adjustment
3. Parking light
4. Directional light

Figure 36—Head Lamp Adjustment.

To obtain maximum results in road illumination and the safety that has been built into the headlighting equipment, the headlamp beams must be properly aimed.

Locate the car on a level floor (with no passengers in the car). Place a light-colored vertical screen 25 feet ahead. (A vertical wall may be used.) Draw a horizontal line on the wall 3 inches below the headlamp center level, and draw a vertical line directly ahead of each lamp. The vertical line midway between the headlamps may be located by sighting through the center of the rear window and over the center of the hood molding.

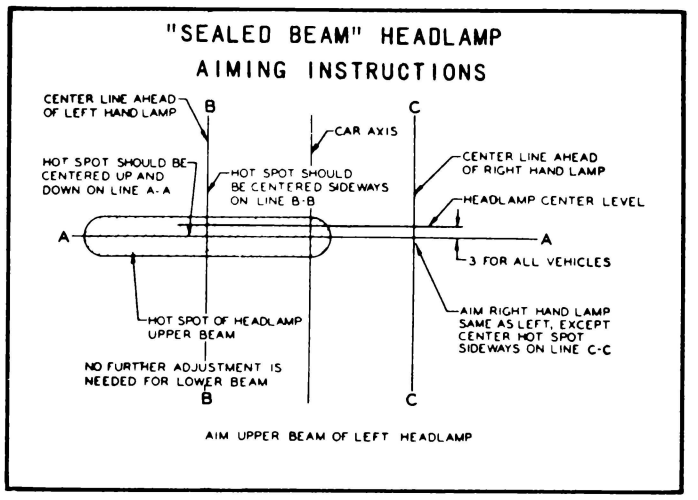
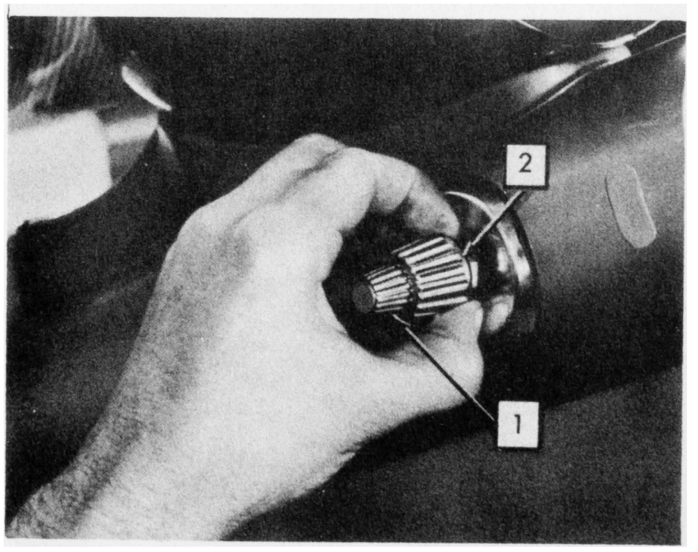


Figure 37—Head Lamp Adjusting Chart.

Cover one lamp and adjust the other lamp by centering the high intensity beam as shown on the chart (Fig. 37).

Repeat this operation for the second lamp. No further adjustment is needed for the lower beam.

CAUTION: *If your State requires a loading allowance, draw the horizontal line below the level line by the amount required in your particular State.*



1. Instrument cluster light
2. Head, tail and parking lights

Figure 38—Light Switch Knob Removal.

Light Switch

The light switch which controls the entire lighting system is located in the steering post jacket tube beneath the steering wheel. It has two knobs, one small one for the instrument cluster light and a larger one for the main lighting system.

To remove the switch, pull off the control knobs, as shown (Fig. 38). Then take off the light switch retaining nut which fastens the shield to the jacket tube. Rotate the switch until its two lugs line up with the notches in the jacket tube. Now the switch can be pulled out of the jacket tube (Fig. 39).

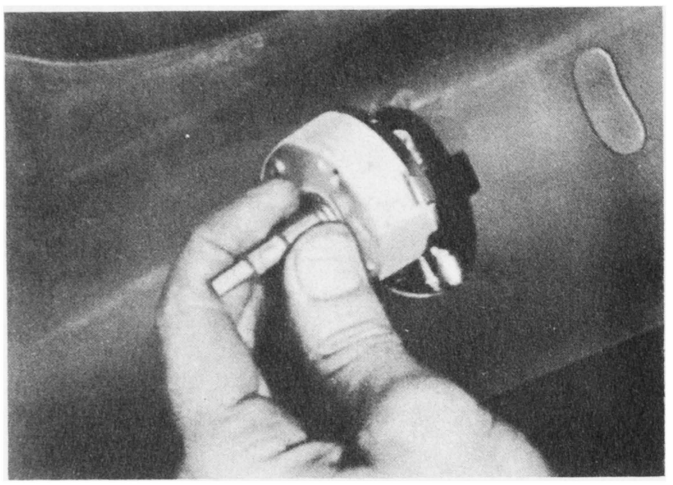


Figure 39—Light Switch Removal from Jacket Tube.

When it is necessary to disconnect the wires from the switch body, tag the wires upon removal, so that they can be replaced properly.

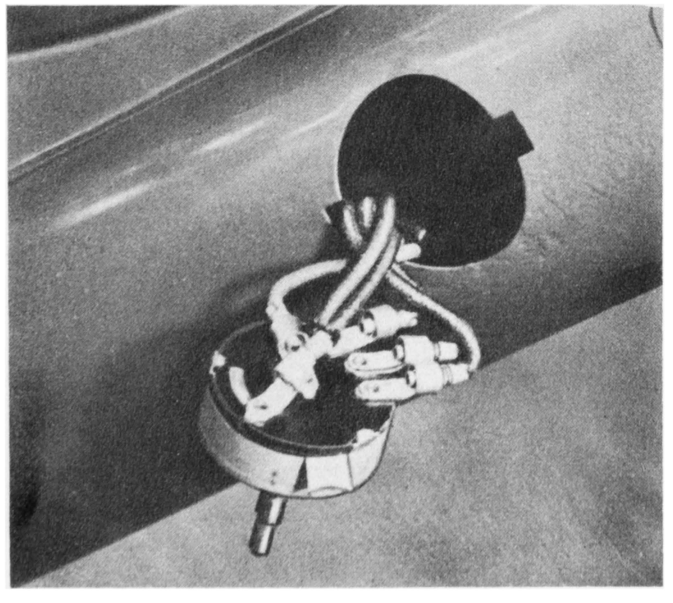
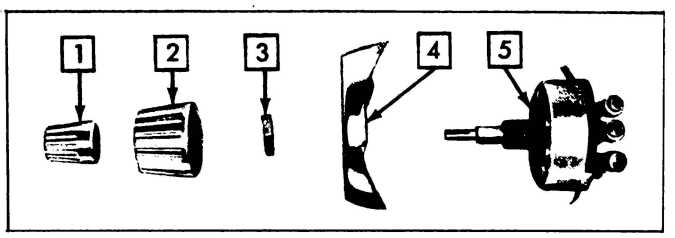


Figure 40—Light Switch Removed from Jacket Tube.

To reassemble the switch, reverse the procedure outlined above. The light switch assembly is shown to Figure 41.



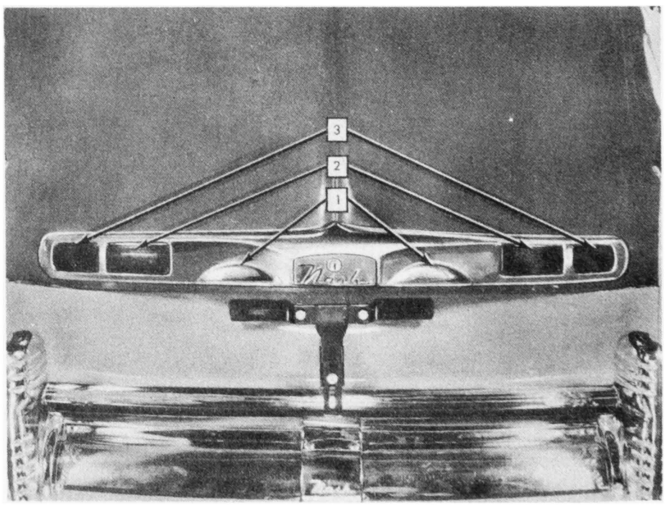
1. Instrument cluster light knob
2. Headlight knob
3. Retaining nut
4. Shield
5. Light switch

Figure 41—Light Switch Assembly.

TAIL, STOP AND PARKING LIGHTS

1949 "600" and "Ambassador 6" Series

The 1949 Series tail, stop and directional signal rear lighting is combined in one large assembly mounted on the rear deck cover lower edge (Fig. 42).



1. Rear license light
2. Tail and stop lights
3. Directional signal lights

Figure 42—Rear Lighting, 1949 Series.

To change a bulb in either tail light, stop light or directional signal light, remove the screws inside the deck cover. The bulb assembly can then be removed and the defective bulb changed.

To change a bulb in the license light (right or left), it is only necessary to remove the bulb socket mounting screw, pull the socket down through the opening, change the bulb and reinstall the socket.

A convenient junction block is provided for connecting the rear lighting circuits (Fig. 43).

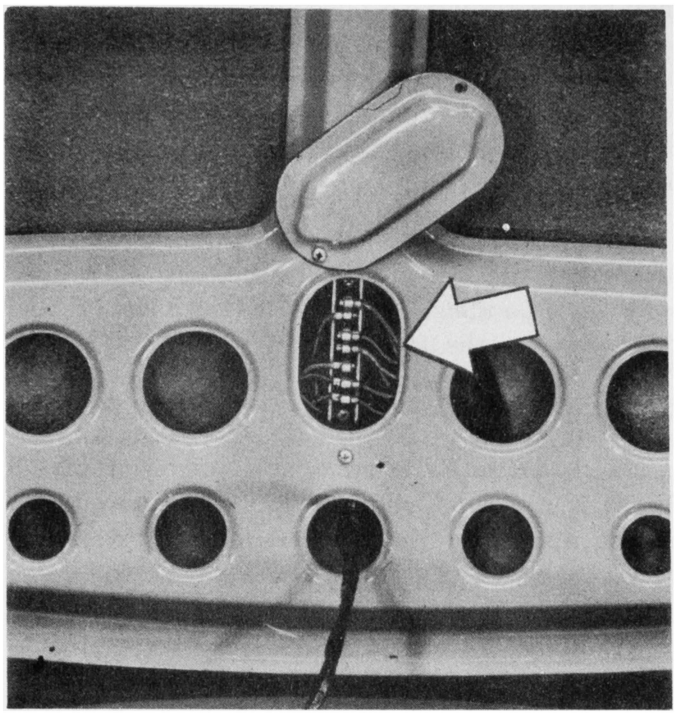


Figure 43—Rear Lighting Junction Block in Rear Deck Cover.

To change a broken lens on any of the external rear lights, it is necessary to remove the entire assembly. Before this can be done, the deck cover handle must be removed.

A combination inside deck and safety light is mounted on the left side inside the deck cover opening. The red jeweled lens provides a light of warning to the rear when the deck cover is raised for changing a tire, etc.

Normal rear lighting is not seen from the rear when the deck cover is raised.

The combination light illuminates the deck interior. It is wired into the parking and driving light circuit by way of the junction block.

HORN EQUIPMENT

Horns and Relay

Description

The horn circuit includes a matched pair of horns, the horn relay, the battery, the horn button and the car frame. With the relay in the circuit, the button is required to carry only the relay control current. Therefore, the spark formed when the button contacts open is much less than it would be if all the current flowed through the button.

The horn button contact plates are actuated by the horn ring beneath the steering wheel. The horn button wire has a bayonet connection at the lower end of the steering post, under the hood.

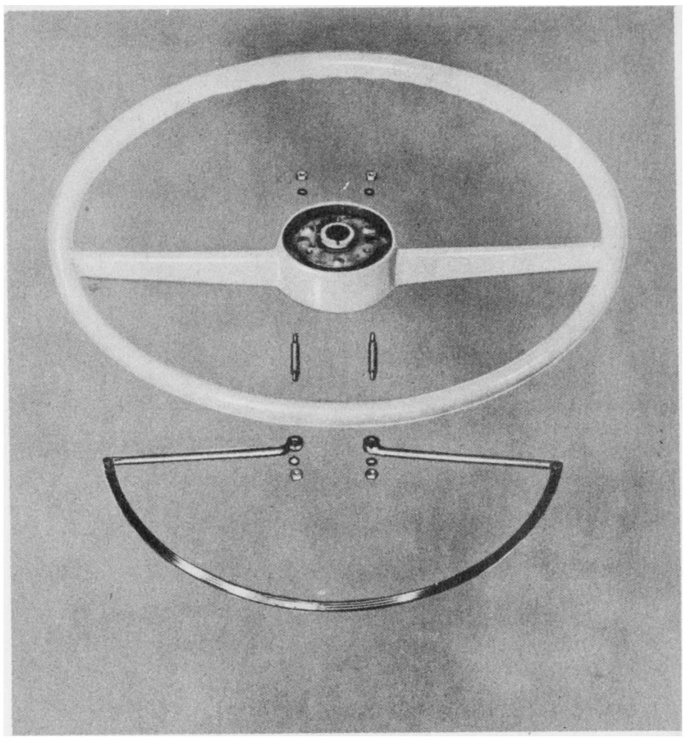


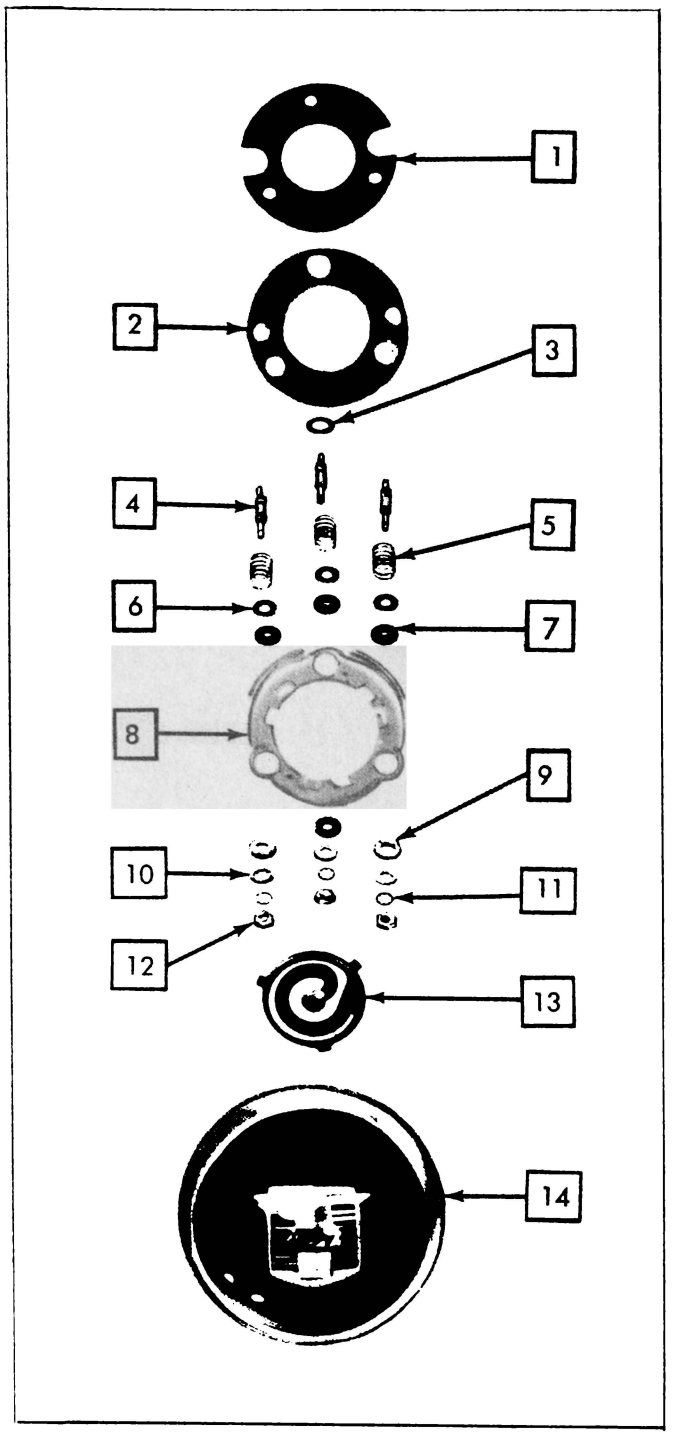
Figure 44—Horn Ring Assembly.

Each horn consists of a diaphragm vibrated rapidly by an electromagnet. When the electromagnet is energized, it pulls on an armature attached to the diaphragm. The slight movement of the armature flexes the diaphragm and also opens a set of contacts. With the contacts open, the electromagnet is no longer energized, and the diaphragm returns to its original shape. This closes the contacts and the cycle is repeated. The constant flexing and straightening of the diaphragm produces vibration and sound.

These horns have tubes built into the trumpets to improve the quality of the tone and to direct its signal.

A resistance unit is connected across the contact points to reduce arcing and prolong contact life.

The horn relay consists of an electro-magnet and a set of contacts arranged so that when the magnet is energized an armature is attracted and the contacts close. A spring keeps the contacts open when the unit is at rest.



1. Contact plate cushion
2. Lower contact plate
3. Washer
4. Stud
5. Spring
6. Washer
7. Insulator
8. Contact plate
9. Insulator washer
10. Steel washer
11. Lock washer
12. Nut
13. Contact spring
14. Cap

Figure 45—Horn Blower Assembly Sequence.

Horn Wiring Maintenance

Inspect the wiring between the horn, button, relay and battery for loose connections, chafed insulation, corroded terminals, and for partial breaks—especially where the leads enter a conduit or are clamped by a terminal. This inspection should include the battery ground strap and the grounding of the horn through its mounting bracket.

If the horns do not operate when the horn ring is depressed, check for breaks in the horn button circuit by grounding the relay "S" terminal. If the horns operate, the horns and relay are not defective. Then the horn button and lead should be thoroughly inspected.

The usual cause of continuous operation of the horns is a ground in the horn button wiring. To check, disconnect the horn button lead from the relay "S" terminal. If this stops the horn operation, inspect the button lead for grounds, especially where it enters the steering column. If the horns do not stop when the "S" terminal lead is removed, disconnect the other leads from the relay and inspect the relay.

Horn Maintenance

The horns should be cleaned and inspected periodically. If horns are rusted or corroded, they should be removed for overhaul. If the horn mounting is cracked or loose, repairs should be made.

To test whether the horns are inoperative, connect a jumper lead from the battery to the horn terminal. The horns should operate with this lead in place. If they do not, ground the horn frame to the chassis to check the horn ground connection. If the horns now operate, the ground connection is at fault and the horn should be removed and the mounting surfaces cleaned.

If the horns are inoperative or do not have a steady, clear tone, they should be removed, cleaned and disassembled. To remove the horn dome, place a screwdriver between the dome head and the projector and loosen with a twist of the screwdriver.

Inspect the diaphragm for cracks and distortion, and inspect the windings and connections for breaks, faulty insulation and grounds.

Measure the resistance of the resistor by placing a card between the contacts and measuring across the resistor terminals with an ohmeter. If the meas-

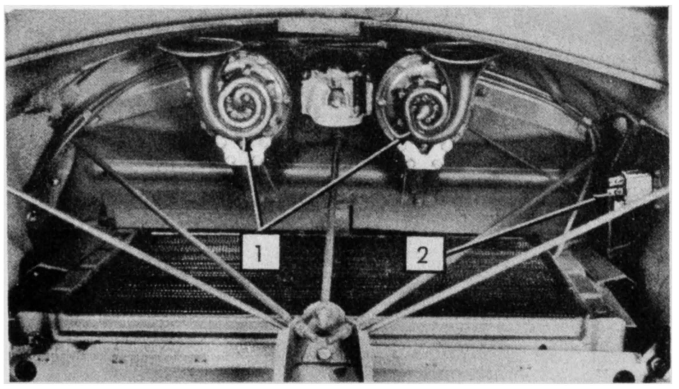
ured resistance is not 2.5 to 2.8 ohms, replace the resistor.

Inspect the contacts. Do not force the contacts apart as this would bend the contact spring and change the contact pressure. If the contacts are rough or burned, clean and polish them with crocus cloth and carbon tetrachloride. If the contacts are burned excessively they should be replaced.

Assemble the horn, leaving the horn dome off until after the horn is adjusted. Be sure all gaskets are in place and thoroughly tighten the diaphragm nut, flange screws and circuit breaker mounting screws. Inspect to see that the circuit breaker contacts are aligned and that the contact spring does not rub against the armature stud.

Measure the gap between the armature and field cup with two flat feeler gauges. Adjust the gap on all sides to .0495″ on the low pitch horn and .040″ on the high pitch horn. To adjust, loosen the lock and turn the armature, screwing it in or out as required. It is sometimes necessary to tap the armature spring plate to loosen it from the armature and allow the armature to turn. Tighten the lock nut and check the gap.

The horn tone depends on the horn mounting. Therefore, for the tuning test, the horn should be mounted on the car by its spring brackets. Connect an ammeter and variable resistance in series with the horn terminal and a 6-volt battery and ground the horn frame to the other battery terminal. Connect a voltmeter from the horn terminal to the horn frame.



1. Horns
2. Relay

Figure 46—Horn and Relay Location.

Loosen the contact lock nut and adjust the stationary contact so that the current flow is 15 amperes at 6.2 volts. Tighten the lock nut and re-check the setting. Install the horn dome and open and close the circuit a few times to see that the horn operates properly.

Repeat this adjustment and test on the second horn.

Horn Relay Maintenance

To check the relay operation, ground the relay "S" terminal. If the relay does not close with the "S" terminal grounded, check the wiring and horns as described previously, and remove the relay for a complete test.

Remove the relay cover. Inspect for dirty or burned contacts and damaged insulation. File the contacts with a #6 American-Swiss cut-equalling file until they are clean and bright. Clean all dirt from the contacts with a strip of clean lintless tape and carbon tetrachloride.

Place a feeler gauge between the core and armature and hold the contacts closed. Have spring tension on the armature but do not seal the armature against the core. Adjust the height of the stationary contact to .016″ to .020″ air gap. Keep the contacts aligned.

Measure the contact point gap and adjust to .026″ by bending the armature stop. Be sure the stop does not interfere with armature movement.

Connect a variable resistance in series with a 6-volt battery and the relay "B" terminal. Connect the relay "S" terminal to the other battery terminal. Connect a voltmeter to the relay "S" and "B" terminals. Connect an indicating light between the relay "H" and "S" terminals. Place the cover in position on the relay but do not clinch it into place. Increase the voltage slowly until the contacts close and the light goes on. Adjust this closing voltage to 1.5 to 3.0 volts by bending the armature hinge ears, keeping both ears aligned. The armature should seal to the core at 4.0 volts maximum, and should open from the sealed position at 0.5 volts minimum.

Install a new cover gasket if necessary. Then clinch the cover in place.

NAME

ary
ary to Starter Switch Cable
ary to Wheelhouse Ground Cable
r to Engine Ground Strap
d Lamp—Left
d Lamp—Right
t Parking Lamp—Left (Without ctional Signal)
t Parking Lamp—Right (Without ctional Signal)
t Parking Lamp—Left (With Directional al)
t Parking Lamp—Right (With ctional Signal)
t Parking Light Bulb
t Directional Light Bulb
d Light Junction Block
—Left High Pitch
—Right Low Pitch
to Horn Wire
to Horn Relay Wire
Relay
ing Motor
ing Switch
Light Switch
Dimmer Switch
ge and Current Regulator
it Breaker

Unit No.

25. Overdrive Switch—With O.D. (Kickdown Switch)
26. Overdrive with O.D.
27. O.D. Relay to Circuit Breaker (30 AMP.) Wire—Short
28. O.D. Relay to Circuit Breaker (15 AMP.) Wire—Long
29. Overdrive Harness (Solenoid to Dash)
30. Overdrive Lockout Switch
31. Overdrive Lockout Switch to Governor Wire
32. O.D. Governor with O.D.
33. O.D. Solenoid with O.D.
34. Heater and Defroster Switch (Spec. Equip.)
35. Defroster Motor (Spec. Equip.)
36. Heater Motor (Spec. Equip.)
37. Defroster Switch to Dash Junction Block Wire
38. Horn Wire—St. Gear Horn Button to Connector
39. Cigar Lighter (Housing)
40. Clock (Spec. Equip.)
41. Clock Wiring Harness
42. Glove Box Light Wire (Dash Connector to Glove Box)
43. Glove Box Light Bulb
44. Generator
45. Ignition Coil

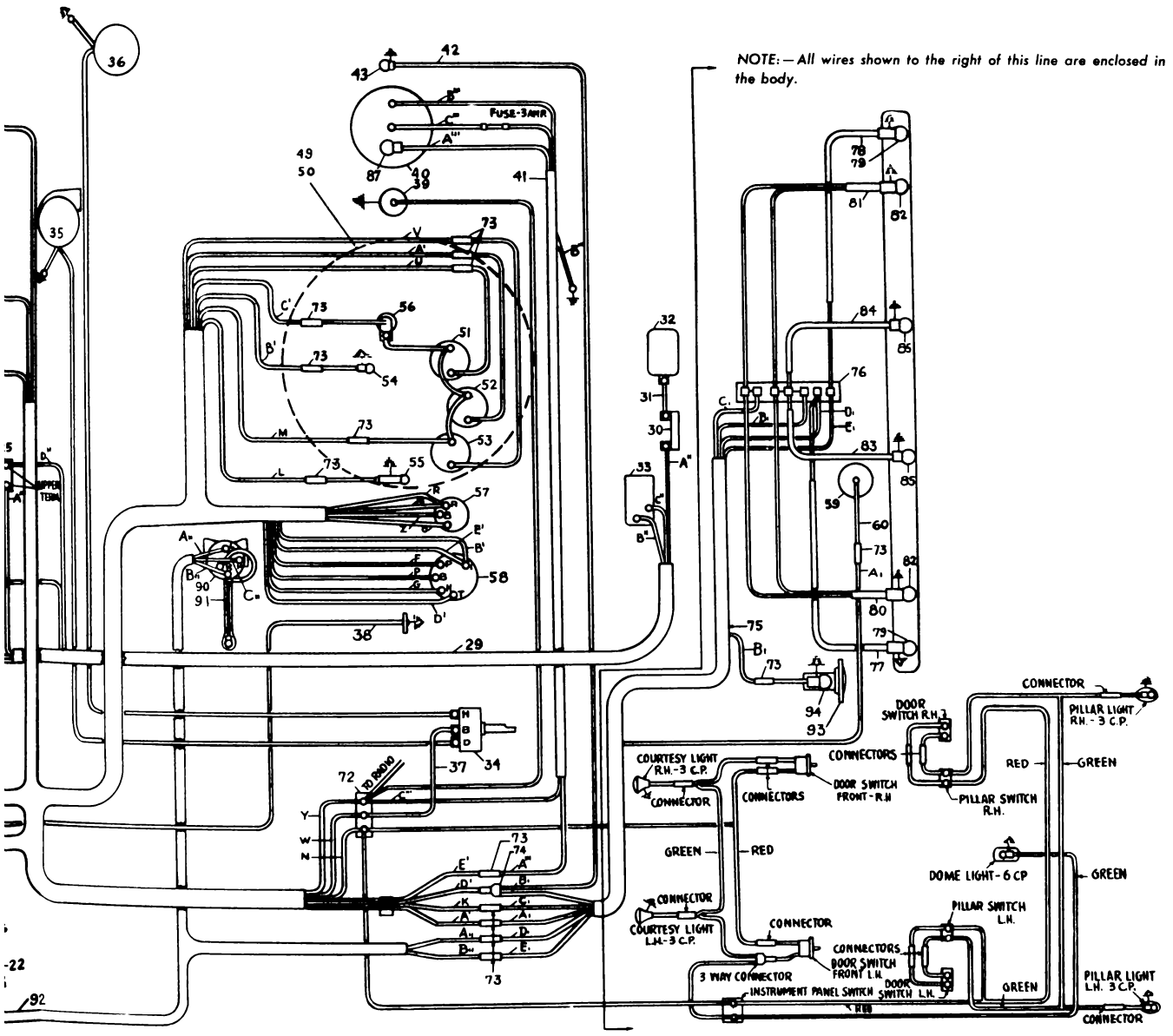
Unit No.

46. Ignition Coil to O.D. Switch Wire (Kickdown Switch)
47. Oil Gauge Sending Unit (Engine Unit)
48. Temperature Gauge—Engine Unit
49. Instrument Cluster (Reads in Miles)
50. Instrument Cluster (Reads in Kilo.)
51. Oil Gauge (Instrument Cluster)
52. Fuel Gauge (Instrument Cluster)
53. Temperature Gauge (Instrument Cluster)
54. Instrument Light Bulb
55. Instrument High Beam Light Bulb
56. No Charge Indicator Bulb
57. Ignition Switch (On Steering Gear Post)
58. Lighting Switch (On Steering Gear Post)
59. Gas Gauge (Tank Unit)
60. Gas Gauge Tank Unit to Connector Wire
61. Distributor
62. Distributor to Ign. Coil H.T. Wire Without Radio
63. Distributor to Ign. Coil H.T. Wire With Radio
64. Distributor to Ign. Coil—Low Tension Wire
65. Ignition Wire #1
66. Ignition Wire #2
67. Ignition Wire #3
68. Ignition Wire #4

Unit No.

69. Ignition Wire #5
70. Ignition Wire #6
71. Wiring Harness (Main)
72. Junction Block (On a Dash)
73. Two Wire Connector
74. Three Wire Connector
75. Wiring Harness—In Body
76. Junction Block in Trunk Door
77. Directional Light Wire—Rear Left
78. Directional Light Wire—Rear Right
79. Directional Light Bulb—Rear
80. Tail & Stop Light Wire—Left
81. Tail & Stop Light Wire—Right
82. Tail & Stop Light Bulb
83. License Plate Light Wire—Left
84. License Plate Light Wire—Right
85. License Plate Light Bulb
86. Starting Switch to Starting Motor Cable
87. Clock Bulb
88. Directional Signal Flasher
89. Direct. Signal Flasher to Circuit Breaker (15 AMP.) Wire
90. Directional Signal Switch (On St. Gear)
91. Directional Signal Lever, Wire & Bulb
92. Directional Signal Wiring Harness
93. Aux. Lamp (In Trunk)
94. Aux. Lamp Bulb

NOTE:—All wires shown to the right of this line are enclosed in the body.



GENERATOR SPECIFICATIONS

Year Series	"600" Series	"Ambassador 6" Series
Make	Delco-Remy	Delco-Remy
Model	1102702	1102702
Type	Shunt	Shunt
Brush Spring Tension	24-28 Ounces	24-28 Ounces
Max. Controlled Charging Rate	35 Amps	35 Amps
Cut-out Relay Voltage at Closing	6.2-6.7	6.2-6.7
Amperes to Open Reverse Current	4-6	4-6
Air Gap	.020"	.020"
Voltage Regulator Volts	7.2-7.4	7.2-7.4
Air Gap	.070"	.070"
Current Regulator Amperes	32-34	32-34
Air Gap	.080"	.080"

STARTING MOTOR SPECIFICATIONS

Year Series	"600" Series	"Ambassador 6" Series
Make	Delco-Remy	Delco-Remy
Model	1109451	1107950
Brush Spring Tension	24-28 Ounces	24-28 Ounces
Lock Test Amperage Draw	540	600
Volts	3.3	3.0
Torque in Foot-Pounds	11.5	16
No Load Test Amperage Draw	60	60
Volts	5.7	5.0
R.P.M.	6000	6000

Nash

1949 "600"
and
"Ambassador 6" Series
Wiring Diagram

Printed in U.S.A.

September 1, 1948

GENERATOR SPECIFICATIONS

Year Series	"600" Series	"Ambassador 6" Series
Make	Delco-Remy	Delco-Remy
Model	1102702	1102702
Type	Shunt	Shunt
Brush Spring Tension	24-28 Ounces	24-28 Ounces
Max. Controlled Charging Rate	35 Amps	35 Amps
Cut-out Relay Voltage at Closing	6.2-6.7	6.2-6.7
Amperes to Open Reverse Current	4-6	4-6
Air Gap	.020"	.020"
Voltage Regulator Volts	7.2-7.4	7.2-7.4
Air Gap	.070"	.070"
Current Regulator Amperes	32-34	32-34
Air Gap	.080"	.080"

STARTING MOTOR SPECIFICATIONS

Year Series	"600" Series	"Ambassador 6" Series
Make	Delco-Remy	Delco-Remy
Model	1109451	1107950
Brush Spring Tension	24-28 Ounces	24-28 Ounces
Lock Test Amperage Draw	540	600
Volts	3.3	3.0
Torque in Foot-Pounds	11.5	16
No Load Test Amperage Draw	60	60
Volts	5.7	5.0
R.P.M.	6000	6000

BATTERY SPECIFICATIONS

Year Series	"600" Series	"Ambassador 6" Series
Make	Auto-Lite	Auto-Lite
Model	CT-1-13	CT-1-15
Ampere Hours: 20-Hour Rating	90	105
Amperes: 20-Minute Rating	114	133
No. of Plates per Cell	13	15

DISTRIBUTOR SPECIFICATIONS

Year Series	"600" Series	"Ambassador 6" Series
Make	Delco-Remy	Delco-Remy
Model	1112351	1110216
Max. Automatic Advance (Dist. Degrees R.P.M.)	11° at 1400 R.P.M.	14° at 1350 R.P.M.
Max. Vacuum Advance Degrees (Dist. Vacuum Inches)	7½°	6°
Vacuum in Inches + or —1"	15 inches	15 inches
Dwell Angle	35°	35°
Rotation	LH	RH
Breaker Gap	.018"-.024"	.018"-.024"
Breaker Arm Tension	17-21 ounces	17-21 ounces
Timing, Breaker Points Open	T.D.C.	T.D.C.
Timing Mark Location	Vibration Dampener	Vibration Dampener
Firing Order	153624	153624
Spark Plug Make	Auto-Lite	A-C
Model	A-5	AC-44
Thread	14 mm	14 mm
Spark Plug Gap	.025"	.025"
Condenser Capacity	.18-.23 Mfd.	.18-.23 Mfd.

FUEL, CARBURETION, EXHAUST SECTION



Nash

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FUEL-CARBURETION-EXHAUST SECTION

NASH TECHNICAL SERVICE MANUAL

FUEL SYSTEM

AIR CLEANERS

1949 "600" and "Ambassador 6" Series

Air cleaners of either the wet (oil bath) or dry (maze) type are used on either model. The air cleaner is a vitally necessary item of equipment, protecting the fuel system and the working parts of the engine from the abrasive, clogging action of dust, dirt and sediment normally present in the combustion air supply. The lower portion of the assembly in either type of air cleaner is designed as a resonance silencer for eliminating the noise of objectionable vibration periods coming out of the carburetor. The air cleaner should be in place on the carburetor air horn whenever the engine is in operation.

Dry Air Cleaner—Service

Dry air cleaner filter elements should be cleaned every 2000 miles or oftener under extremely dusty conditions. To service, disassemble and clean all parts of the cleaner in kerosene or a suitable solvent. After draining and blowing off excess fluid, dip the maze (wire) in light engine oil. Reassemble and install.

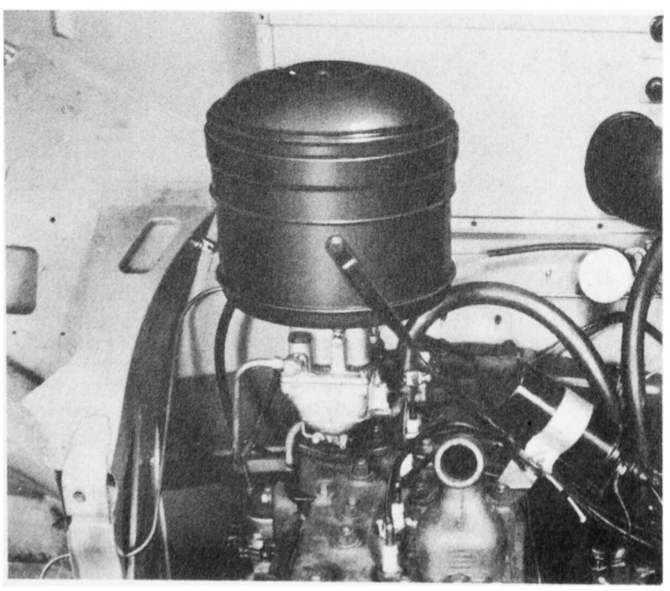


Figure 1—Oil Bath Air Cleaner ("600" Series).

Oil Bath Air Cleaner—Service

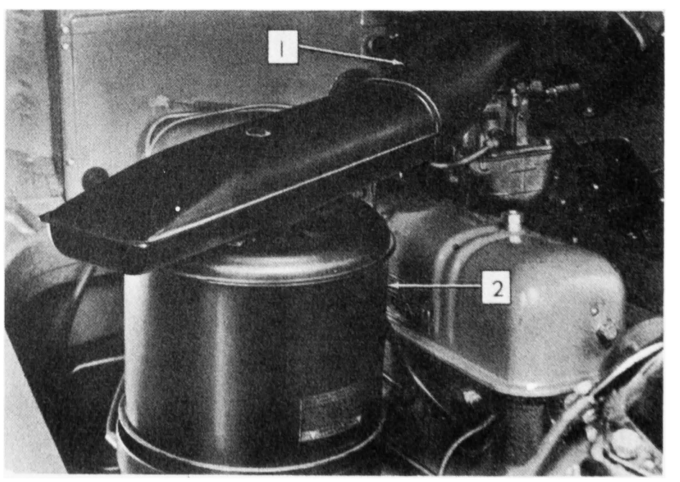
Oil bath air cleaners should be serviced at least every 5,000 miles. If very dusty operating conditions exist, more frequent service is needed.

To service, disassemble and clean all parts thoroughly in kerosene or solvent. Blow off the excess with compressed air. Fill the oil bath to the level indicated, using S.A.E. 50 for moderate weather, and S.A.E. 20 when operating in temperatures below freezing. Reassemble and install.

FUEL PUMP

1949 "600" and "Ambassador 6" Series

The fuel pump rocker arm is actuated by a cam on the engine camshaft. The fuel pump provides a steady supply of fuel at a fairly constant pressure to the carburetor float needle valve. When the car-



1. Molded rubber adapter
2. Air cleaner

Figure 2—Oil Bath Air Cleaner ("Ambassador 6" Series).

buretor needle valve closes, accumulation of fuel in the fuel pump body extends the diaphragm and compresses the diaphragm spring. This causes the rocker arm linkage to become momentarily inoperative, allowing the pump discharge pressure to be controlled by the diaphragm spring.

In all cars without overdrive, the single-acting, or A. C. "W" type fuel pump is used (Fig. 3).

Models equipped with overdrive use the double-acting or combination fuel vacuum pump (Fig. 4).

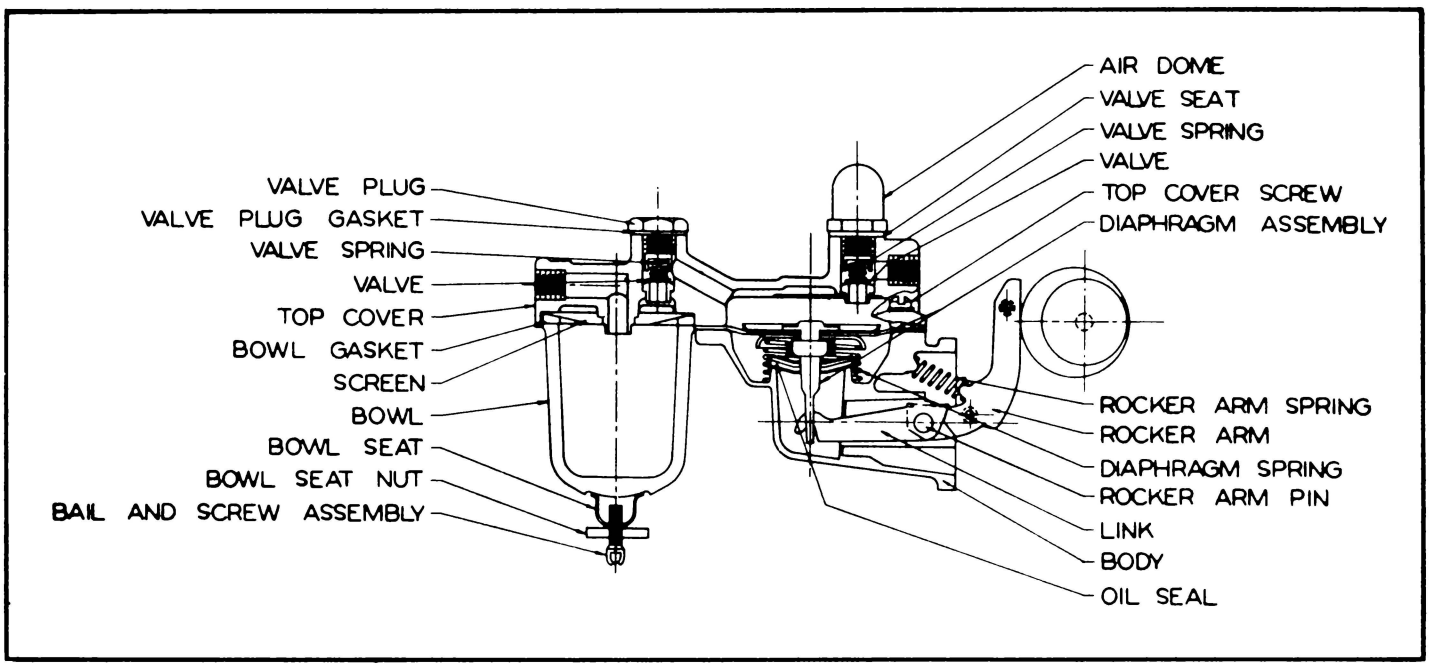
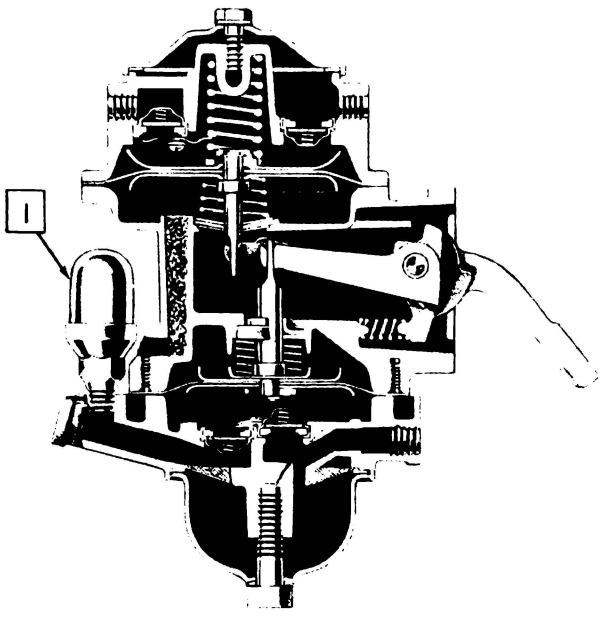


Figure 3—Single-acting Fuel Pump. (Both Series, Without Overdrive).



1. Air dome

Figure 4—Double-acting or Combination Fuel Vacuum Pump. (Both Series With Overdrive).

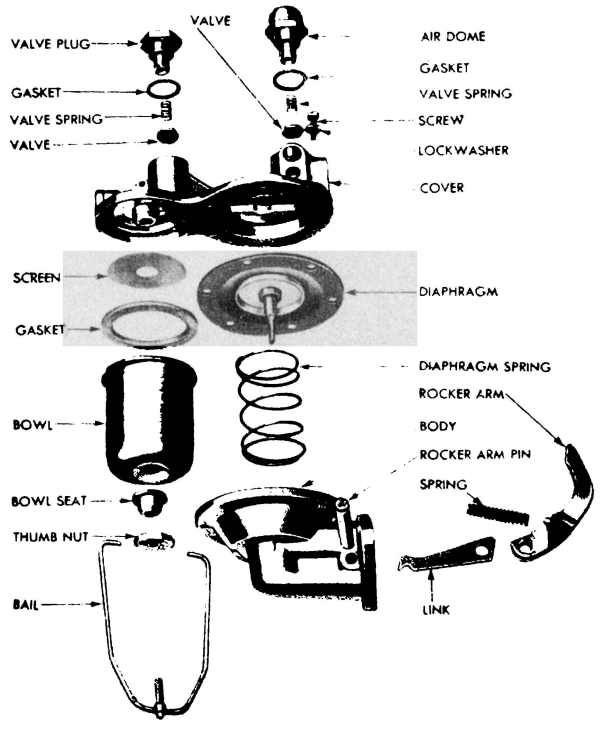


Figure 5—Single-acting Fuel Pump (Exploded View).

This pump, in addition to furnishing fuel pressure, has a vacuum booster pump incorporated in it. This second pump helps to boost intake manifold vacuum to give more steady windshield wiper operation during periods when the overdrive is in use.

Both types of fuel pumps have an air dome on the discharge side to dampen out the pulsations in flow. This minimizes the flow variations and increases the pump output.

Fuel pumps, like carburetors, require occasional overhaul. Repair kits for this purpose are available.

Following are two exploded views which should aid in overhaul operations.

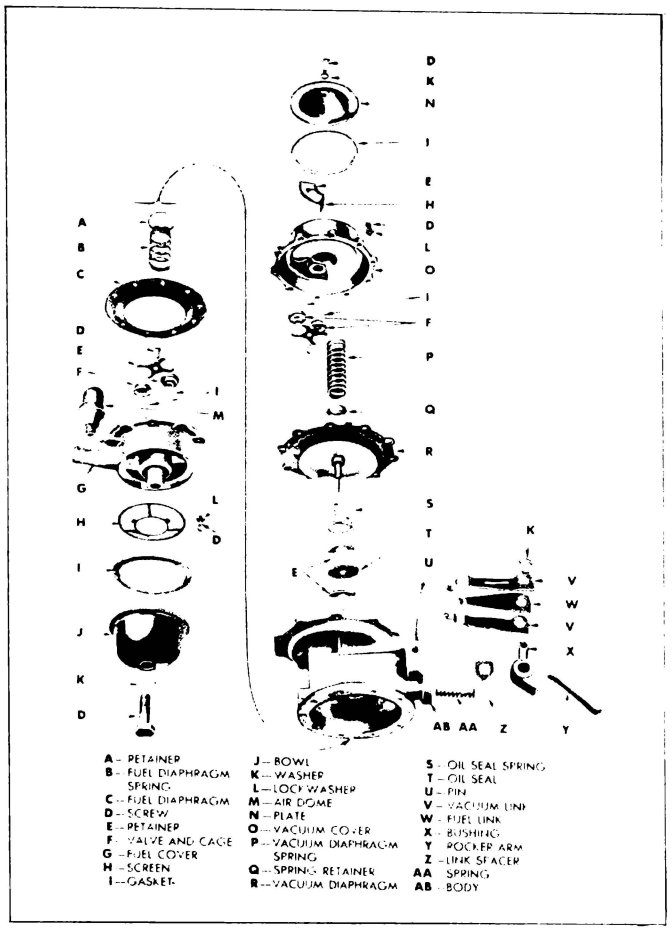


Figure 6—Combination Fuel Vacuum Pump (Exploded View).

Service and Adjustments

Fuel pump repairs are divided into two classifications:

1. Repairs made without disturbing pump installation.
2. Repairs which necessitate removal and disassembly of the fuel pump.

NOTE: *When "trouble-shooting" the fuel system, eliminate all possible troubles outside the pump, such as leaky or plugged lines, empty tank or stopped air vent, before suspecting the pump.*

Repairs Made Without Removing Pump

First, check the fuel pump. The pressure should range from 3 to 4½ lbs. (5 lbs. absolute maximum), and the capacity should be 1 pint or over in 1 minute. If capacity and pressure are correct, the trouble must be elsewhere. Check the carburetor float and needle for proper functioning. If the pump fuel capacity is low, check the fuel lines for leaks, split seams, kinks or other defects.

Assembly on Engine

Extreme care should be used in reassembling the pump to the motor. The cam surface of the rocker arm on the "W" type pump should rest against the

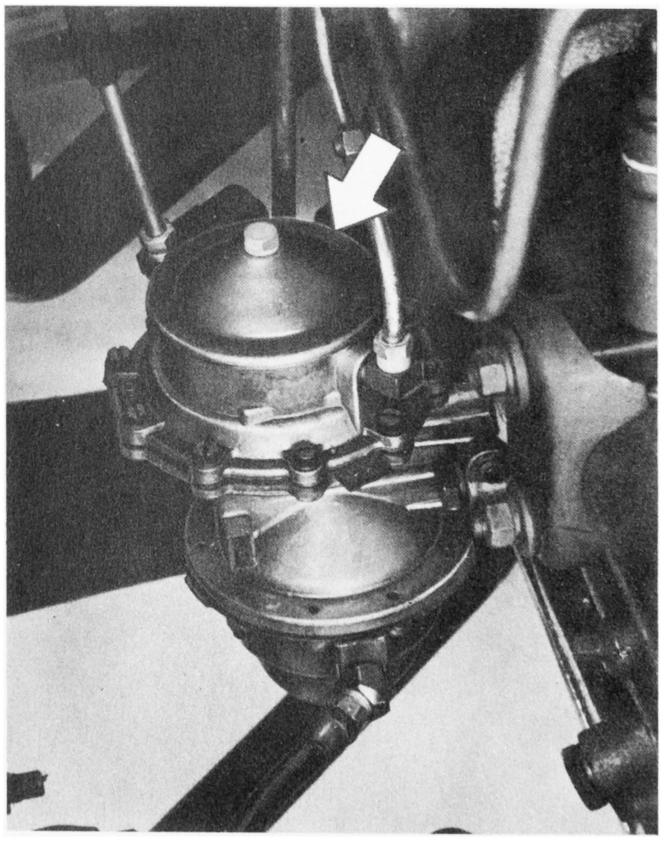


Figure 7—Combination Fuel and Vacuum Pump.

TOP of the eccentric and NOT under it. On combination "AJ" pumps, the cam surface of the rocker arm should rest UNDER the eccentric and NOT on top of it. Failure to carefully observe the above will result in the rocker arm being broken.

Place the mounting gasket in position on the mounting flange and then reinstall the pump on the engine (Fig. 7). To check the performance of the vacuum pump unit, open the windshield wiper valve and observe the performance while alternately idling and accelerating the engine. The operation of the windshield wiper should be reasonably constant, regardless of engine speed.

CARBURETOR SECTION

1949 "600" SERIES

Specifications

Dimensions: Flange size, 1¼ inch S.A.E.
Primary venturi, $1\frac{1}{32}$ inch I.D.
Secondary venturi, $1\frac{1}{16}$ inch I.D.
Main venturi, 1¼ inch I.D.

Float Level: Distance from seam of float (at free end) to tip on lower edge of float chamber cover to be ½ inch when needle is seated.

Outside Vent: No. 10 drill size.
No inside vent.

Gasoline Intake: Square vertical needle No. 48 drill size in needle seat.

Gasoline Line Connection: $\frac{5}{16}$ inch weatherhead nipple.

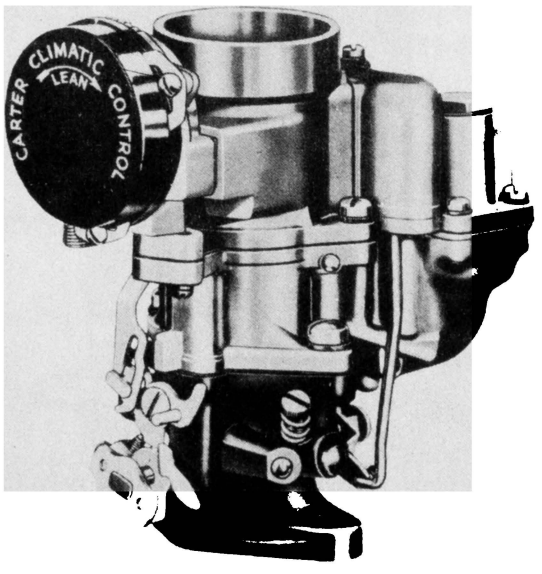


Figure 8—Carter WA1-6945 Carburetor.

Low Speed Jet Tube: No. 69 drill size.
By-pass in body, No. 53 drill size.
Economizer in body, .0755-.0765 inch diameter.
Idle bleed, No. 50 drill size.

Idle Port: Slot type; length, .200 inch; width, .032 inch.

Idle Port Opening: Top of port .153 to .157 inch above top edge of valve with valve tight closed.

Idle Screw Seat: No. 46 drill.

Set Idle Adjustment Screw: ¾ to 1¾ turns open. For richer mixture, turn screw out. Do not attempt to idle engine below 350 r.p.m. or 7m.p.h.

Main Nozzle: In primary venturi, angle 45°. Angled tip.
Inside diameter, No. 30 drill.
Discharge jet size, .086 inch diameter.

Metering Rod: Economy step, .078 inch diameter. Middle step tapers to .072 inch diameter. Power step, .044 inch diameter. Length of rod, $3\frac{9}{64}$ inches.

Metering Rod Jet: .103 inch diameter.

Metering Rod Setting: Use gauge, Part No. T109-102 (2.468 inches.)

Accelerating Pump: Pressure type, with adjustable stroke. Discharge through nozzle. Intake ball check; seat size, No. 40 drill in body.

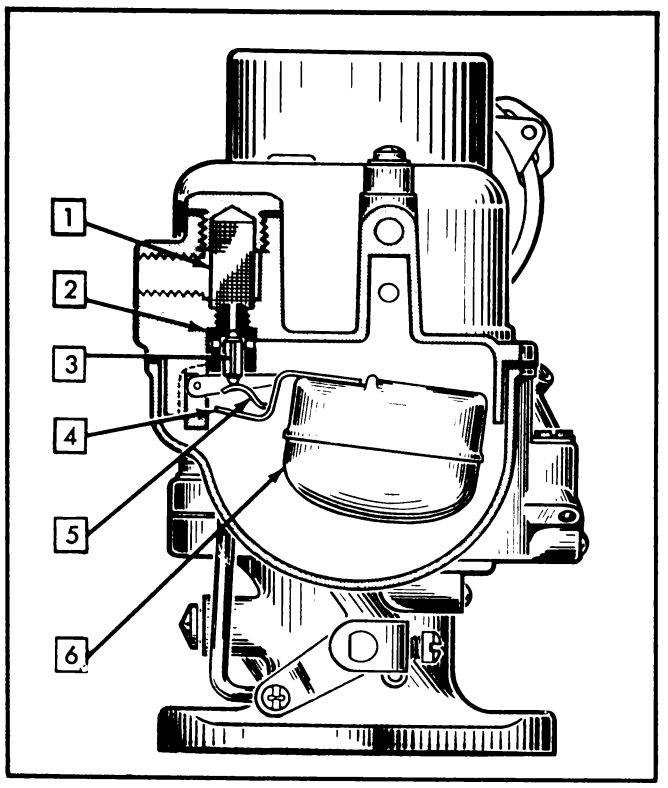
Pump Adjustment: $\frac{23}{64}$ inch plunger travel. Top hole. (Full throttle position.) Use gauge T109-117S.

Choke: Carter Climatic Control set on index. Butterfly type, offset valve. Choke heat suction hole, in body. Size, No. 42 (.0395) drill.

Vacuum Spark Port: .039 to .041 inch diameter. Bottom of port .021 to .029 inch above valve.

The fuel circuits used during carburetor operation are listed as follows:

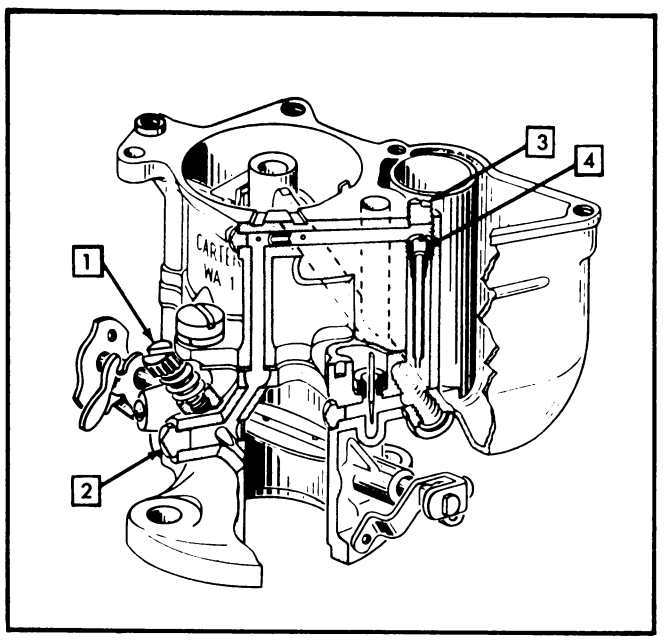
Float Circuit



1. Strainer
2. Float needle seat
3. Float needle
4. Float lever
5. Float lever lip
6. Float

Figure 9—The Float Circuit.

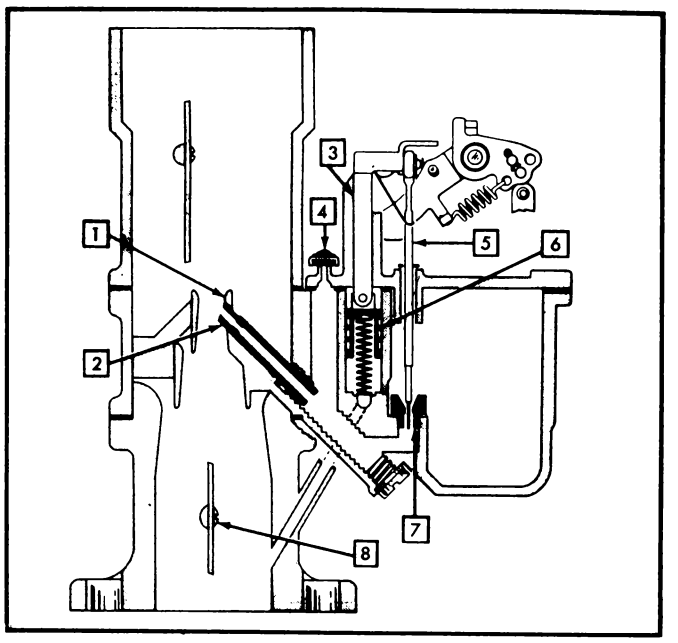
Low Speed Circuit



1. Idle adjusting screw
2. Idle passage plug
3. Low speed jet plug
4. Low speed jet

Figure 10—The Low Speed Circuit.

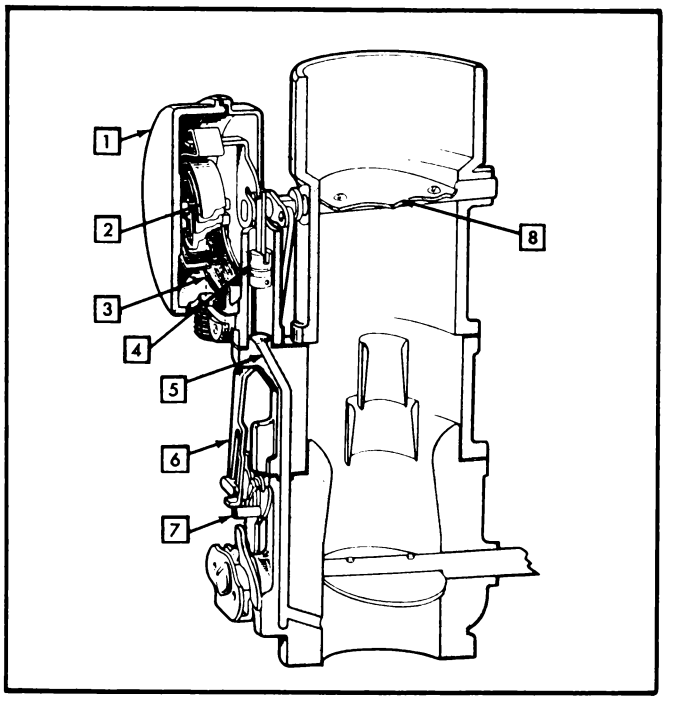
High Speed Circuit



1. Venturi
2. Nozzle
3. Vacuum piston link
4. Anti-percolator cap
5. Metering rod
6. Vacuum piston
7. Metering rod jet
8. Throttle valve assembly

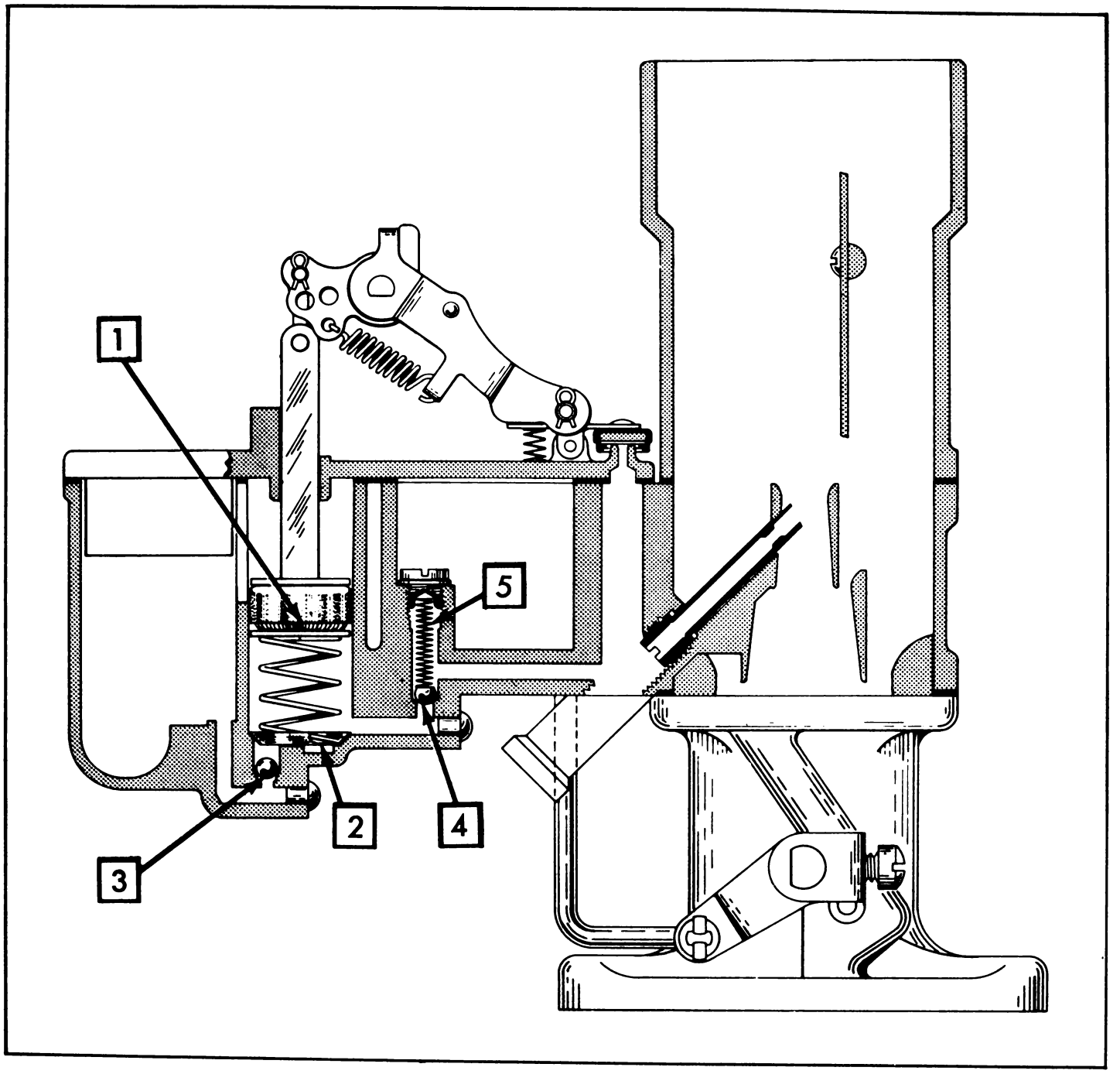
Figure 11—The High Speed Circuit.

Choke Circuit



1. Housing
2. Thermostatic coil
3. Screen
4. Choke piston and lever
5. Vacuum passage
6. Fast idle link
7. Fast idle cam
8. Choke valve and lever assembly

Figure 12—The Choke Circuit.



1. Pump piston and spring assembly
2. Strainer
3. Inlet check ball
4. Discharge check ball
5. Discharge check ball spring

Figure 13—The Pump Circuit.

Pump Circuit

The pump circuit differs from prior model carburetors, as no pump jet is used. The pump discharges through the nozzle into the primary venturi. A spring loaded ball acts as a discharge check. It prevents any fuel from entering the nozzle well from the pump cylinder after the pump stroke is completed, as shown in Figures 11 and 13.

Float Level

Invert the bowl cover as it is assembled and gauge the vertical distance from the top of the projection

on the bowl cover to the top of the soldered seam at the front end of the float (Fig. 14).

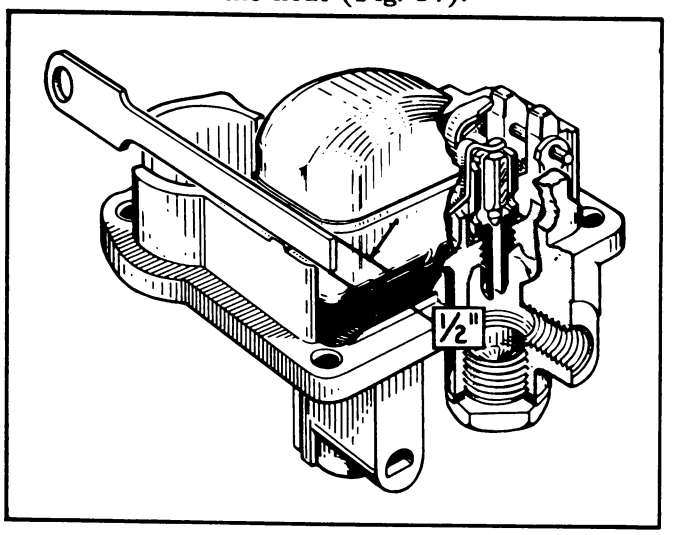
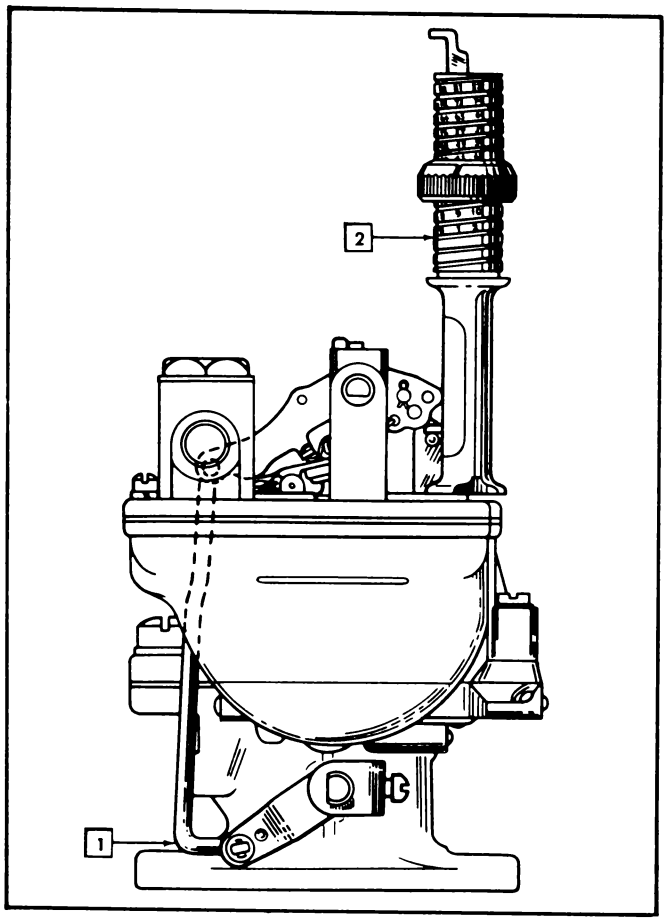


Figure 14—Checking Float Level. Correct Setting—½ Inch.

The adjustment is obtained by bending the lip on the float which contacts the needle. Do not bend on the front of the float while adjusting.



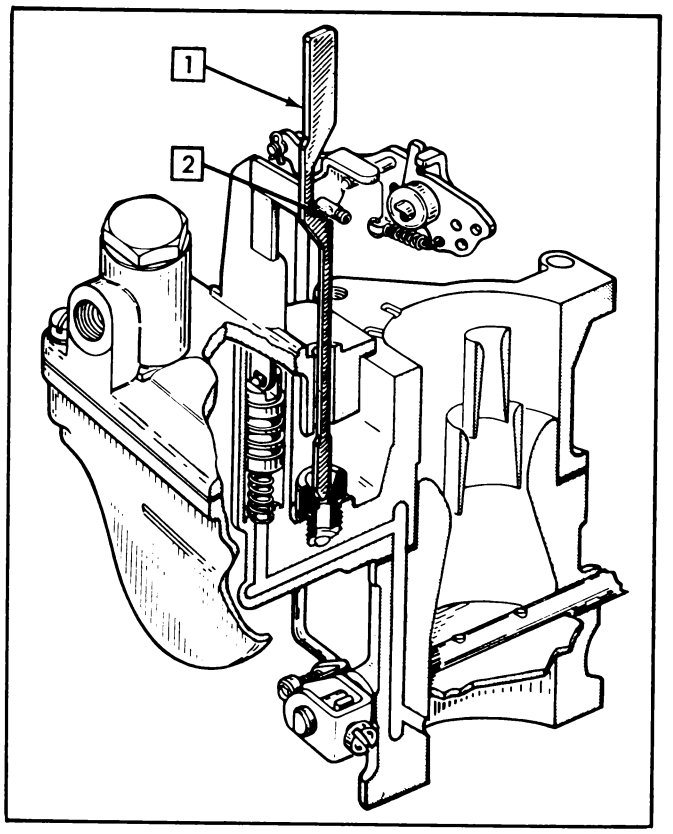
1. Bend at this point
2. Tool T109-117S

Figure 15—Pump Stroke Adjustment.

Pump Stroke Adjustment

With the throttle valve seated and the connector link in upper hole of the pump arm, the pump plunger should travel $^{23}/_{64}$" from a seated position to the wide open position. This pump travel can be measured by using a universal pump stroke gauge T109-117S (Fig. 15). Place the base of the gauge on the ridged portion of the bowl cover so that the indicator ear of the pump gauge rests on the top surface of the connector link, where it extends through the plunger shaft. Hold the gauge vertical. The difference between the number shown by the index mark on the gauge, at the wide open and closed positions, should be "23". The position of the link may be changed to accommodate climatic conditions after the adjustment has been made.

Adjustment should be made by bending the throttle connector rod at the lower angle as shown in Figure 15.



1. Tool T109-102
2. Less than .005"

Figure 16—Metering Rod Adjustment.

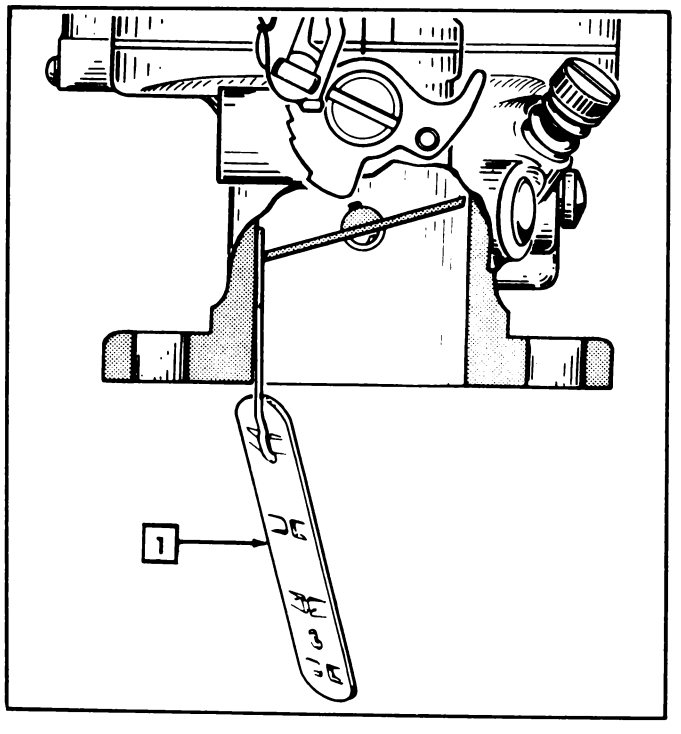
Metering Rod Adjustment

The correct setting of the metering rod is important and must be made after the pump adjustment. The procedure is as follows:

1. Back out throttle lever set screw to seat throttle valve.
2. Insert metering rod gauge T109-102 in place of metering rod, seating tapered end in metering rod jet, as shown in Figure 16.
3. Press lightly on vacuum piston link until lip contacts pin on pump operating lever. There should be less than .005" clearance between metering rod pin and shoulder in notch of gauge.
4. Adjustment can be made by bending lip of vacuum piston link.
5. Remove gauge and install metering rod and disc. Connect metering rod spring.

Anti-Percolator Adjustment

Crack the throttle valve .030" by placing gauge T109-29 between the valve and the bore of the carburetor (side opposite port). Bend the rocker arm (use Tool T109-105) until there is a clearance of .005" to .015" between the rocker arm and the pump arm, as shown in Figure 17.



1. Tool T109-29

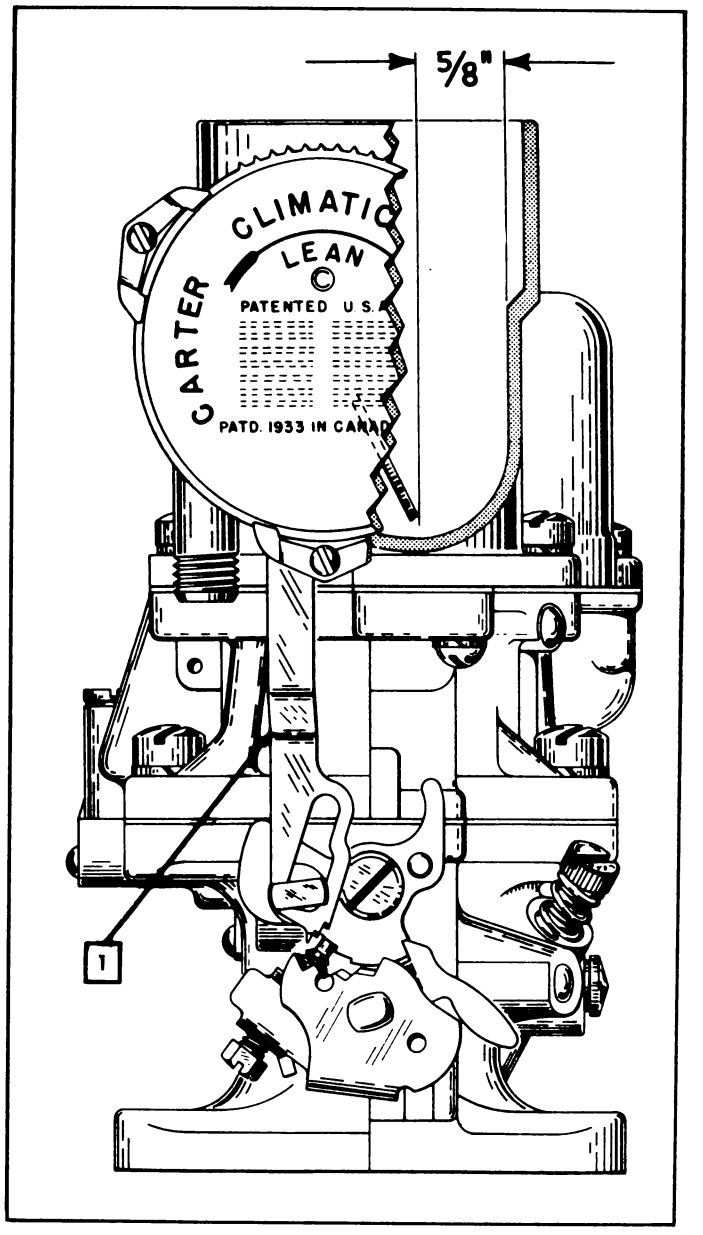
Figure 17—Anti-Percolator Adjustment.

Fast Idle Adjustment

With the fast idle cam held in a normal idle position, tighten the throttle lever adjusting screw until it just touches the cam. Now hold the throttle closed, and pull the cam back until the first (or lower) step on the cam is against (not on) the set screw.

There now should be 5/8" clearance between inside wall of air horn and the lower edge of the choke valve. (Use Tool T109-85.)

This adjustment can be made by bending the offset portion of the fast idle link. (Use Tool T109-41.)



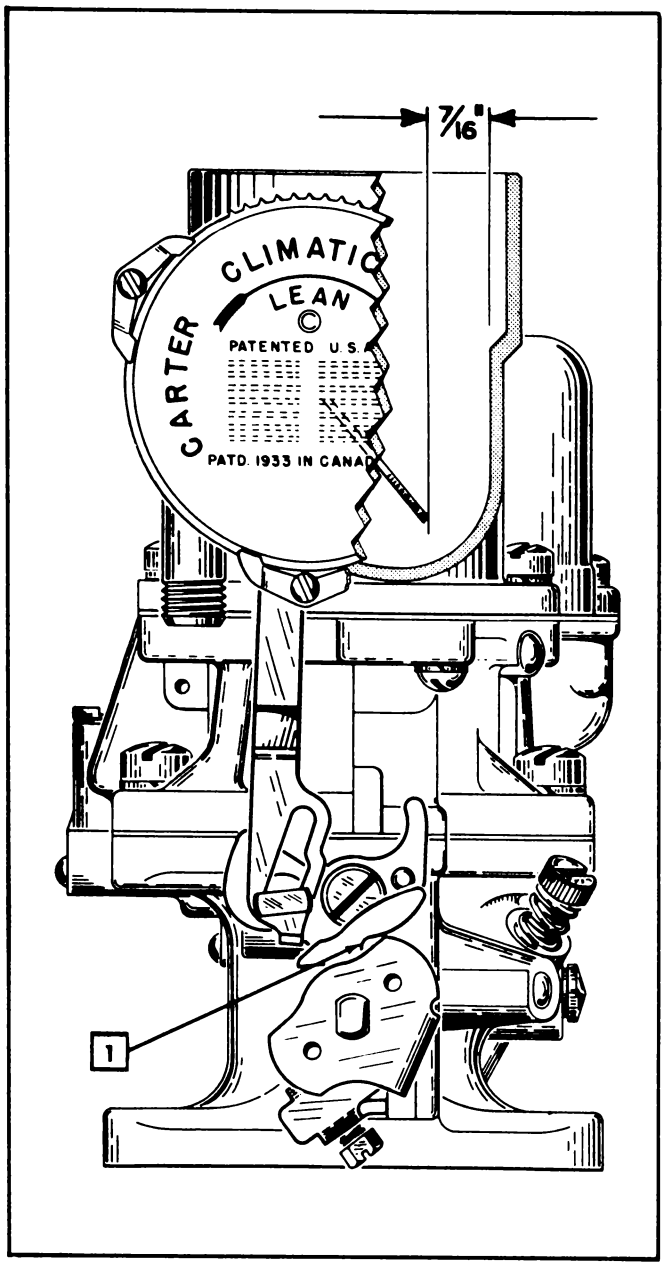
1. Bend here

Figure 18—Fast Idle Adjustment.

Unloader Adjustment

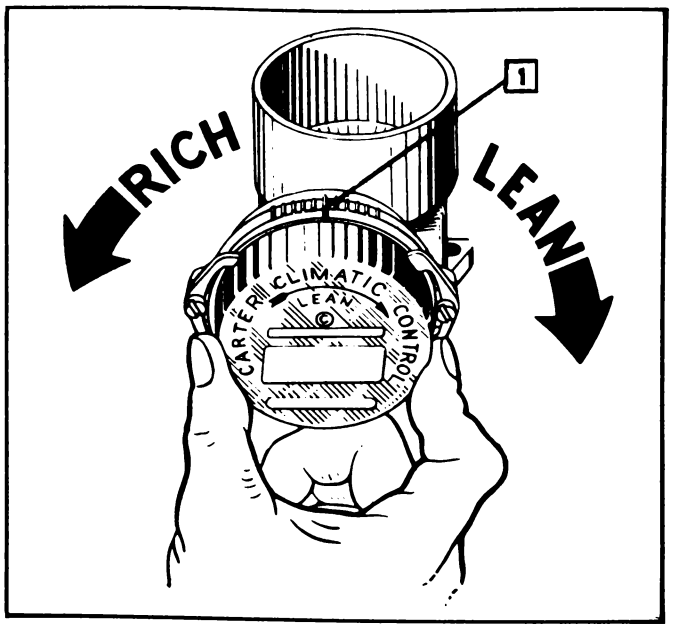
With the throttle valve wide open there should be 7/16" clearance between the lower edge of the choke valve and the inner wall of air horn. Use gauge T109-81 (Fig. 19). This adjustment should be

made by bending arm on the throttle lever using tool T109-41.



1. Bend here

Figure 19—Unloader Adjustment.



1. Index mark

Figure 20—Climatic Control Adjustment.

Lockout Adjustment

With the throttle and choke valves wide open, the choke should lock in the wide open position. This adjustment should be made by bending the lip at the lower end of the fast idle link to give $\frac{1}{32}$" clearance between the lip and the throttle lever lock. (Use Tool T109-105.) See Figure 19.

Climatic Control Adjustment

For average driving and climatic conditions, the coil housing should be set at the index mark as in Figure 20.

Action of climatic control during warm-up period is affected by grade of fuel used.

Adjustments must be made with carburetor on car—and between adjustments THE ENGINE MUST BE THOROUGHLY COOLED OFF. At least four hours should be used to cool the engine.

1949 "AMBASSADOR 6" SERIES

Specifications

Dimensions: Flange size, 1¼ inch S.A.E.

Primary venturi, $1\frac{1}{32}$ inch I.D.

Secondary venturi, $1\frac{1}{16}$ inch I.D.

Main venturi, $1\frac{5}{16}$ inch I.D.

Float Level: Distance from seam of float (at free end) to tip on lower edge of float chamber cover to be ½ inch when needle is seated.

Outside Vent: No. 10 drill size (2 holes). No inside vent.

Gasoline Intake: Square vertical needle. No. 46 drill size in needle seat.

Gasoline Line Connection: $\frac{5}{16}$ inch weatherhead nipple.

Low Speed Jet Tube: Jet No. 66 drill size.
By-pass in body, No. 53 drill size.
Economizer in body, .059-.060 inch diameter.
Idle bleed, No. 50 drill size.

Idle Port: Length, .175 inch; width .030 inch.

Idle Port Opening: .137 to .141 inch above upper edge of valve with valve closed tight.

Idle Screw Seat: No. 46 drill.

Vacuum Spark Port: .061 to .064 inch diameter. Bottom of port .022 to .027 inch above valve.

Set Idle Adjustment Screw: ½ to 1½ turns open. For richer mixture, turn screw out. Do not attempt to idle engine below 350 r.p.m. or 7 m.p.h.

Main Nozzle: In primary venturi, angle 45°. Closed tip. Top hole No. 75 drill on 45° angle. Lower hole No. 46 drill on 70° angle.

Metering Rod: Standard: Economy step, .076 inch diameter. Middle step tapers to .066 diameter. Power step, .040 inch diameter. Length of rod, $3\frac{9}{64}$ inches.

Metering Rod Jet: .0995 inch diameter.

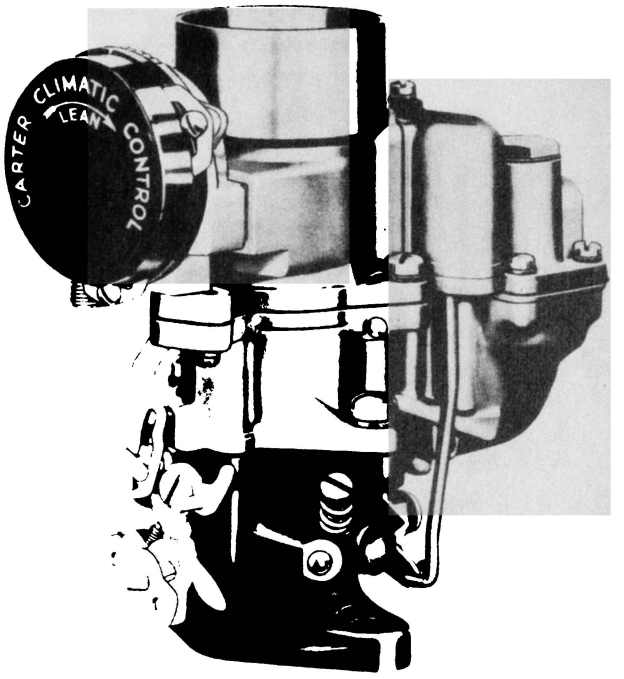


Figure 21—Carter WA1-683S Carburetor.

Metering Rod Setting: Use gauge, part No. T109-102 (2.468 inches).

Accelerating Pump: Pressure type, with adjustable stroke.

Discharge through nozzle.

Intake ball check seat size, No. 40 drill in body.

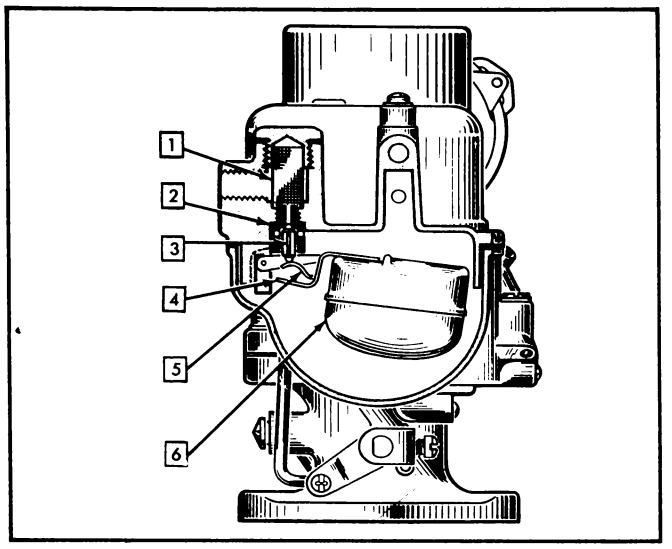
Pump Adjustment: $\frac{27}{64}$ inch plunger travel (long stroke). Use gauge T109-117S.

Choke: Carter Climatic Control, set at index. Butterfly type, offset valve. Choke heat suction hole, in body, Size No. 37 (.104") drill.

Fuel Circuits

The fuel circuits used during carburetor operation are listed as follows:

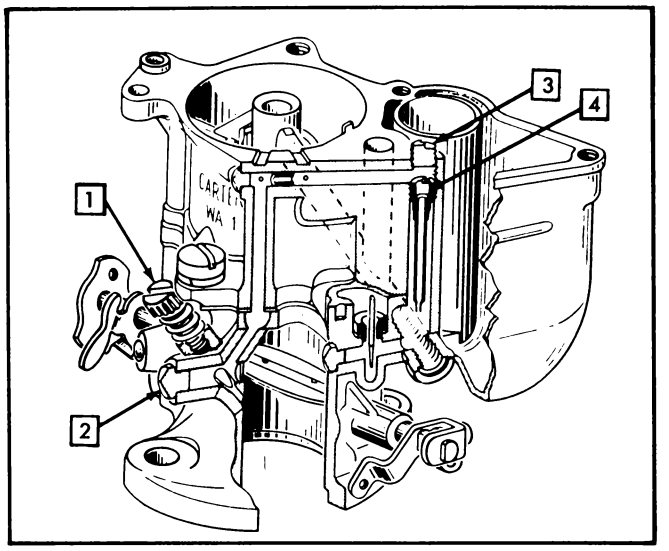
Float Circuit



1. Strainer
2. Float needle seat
3. Float needle
4. Float lever
5. Float lever lip
6. Float

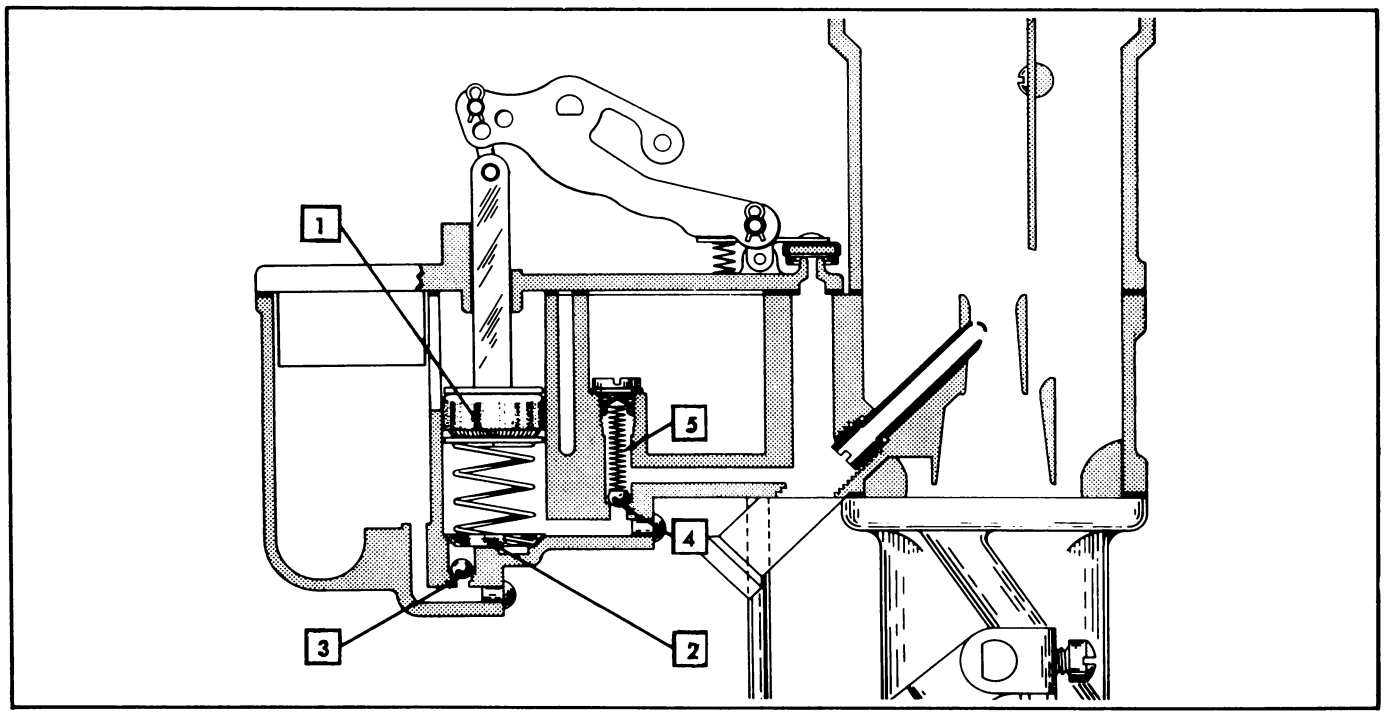
Figure 22—The Float Circuit.

Low Speed Circuit



1. Idle adjusting screw
2. Idle passage plug
3. Low speed jet plug
4. Low speed jet

Figure 23—The Low Speed Circuit.



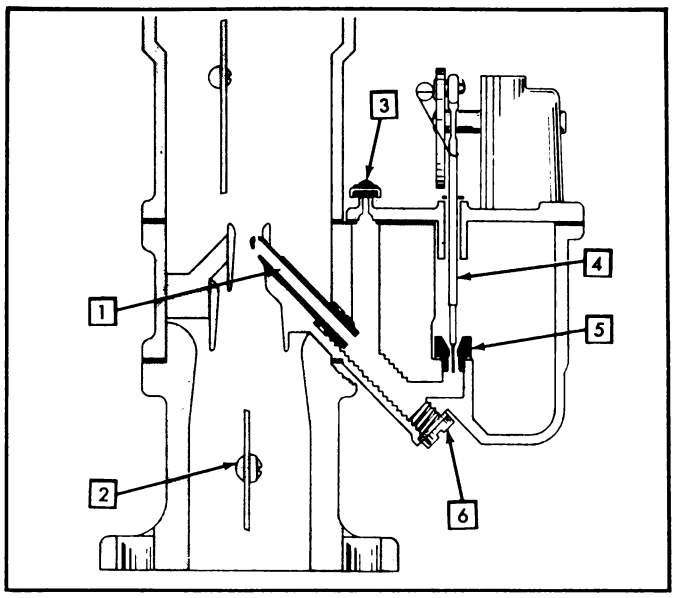
1. Pump piston and spring assembly
2. Strainer
3. Inlet check ball
4. Discharge check ball
5. Discharge check ball spring

Figure 24—The Pump Circuit.

Pump Circuit

The pump circuit differs from prior carburetor models, as there is no pump jet used. The pump discharges through the nozzle into the primary venturi. A spring loaded ball acts as a discharge check and prevents any fuel from entering the nozzle well from the pump cylinder after the pump circuit is completed, as shown in Figure 24.

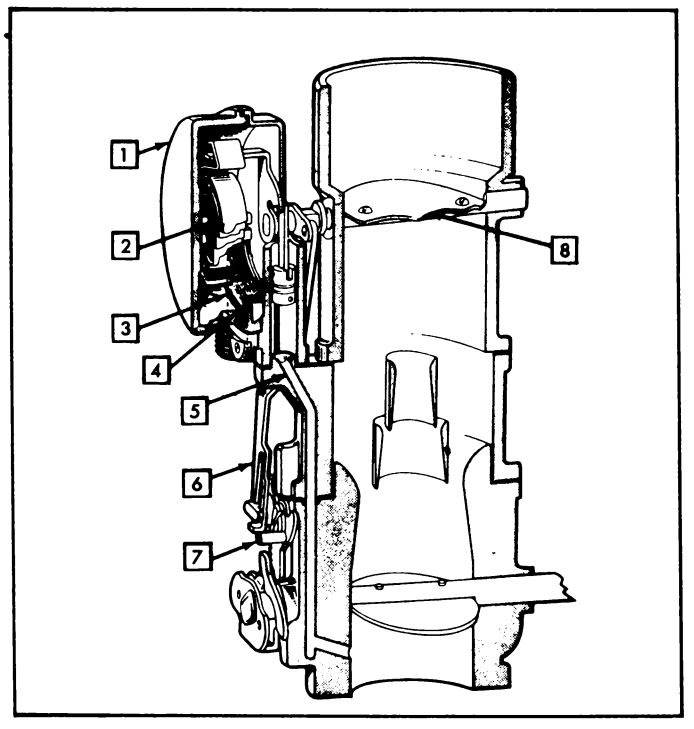
High Speed Circuit



1. Nozzle
2. Throttle valve and shaft assembly
3. Anti-percolator cap
4. Metering rod
5. Metering rod jet
6. Nozzle passage plug and gasket assembly

Figure 25—The High Speed Circuit.

Choke Circuit



1. Housing
2. Thermostatic coil
3. Screen
4. Choke piston and lever
5. Vacuum passage
6. Fast idle link
7. Fast idle cam
8. Choke valve and lever assembly

Figure 26—The Choke Circuit.

Float Level

Invert the bowl cover as assembled and gauge the vertical distance from the top of the projection on the bowl cover to the top of the soldered seam at the front end of the float, as shown in Figure 27.

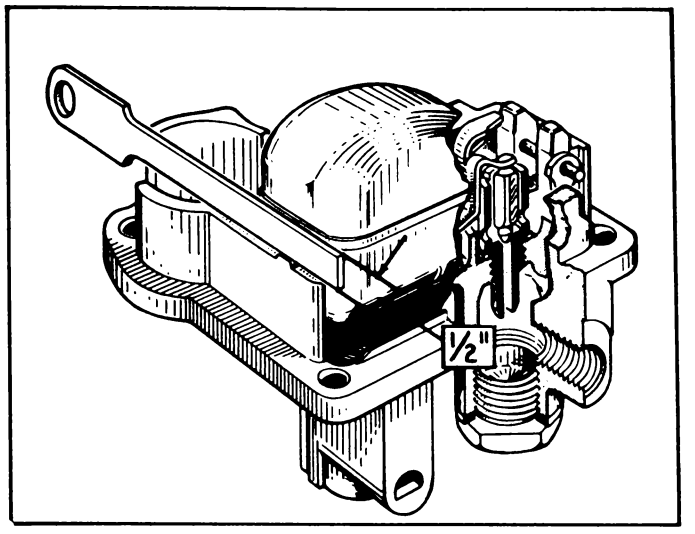


Figure 27—Checking Float Level.

This adjustment is obtained by bending the lip on the float which contacts the needle. Do not bend the front of the float in adjusting (Fig. 27).

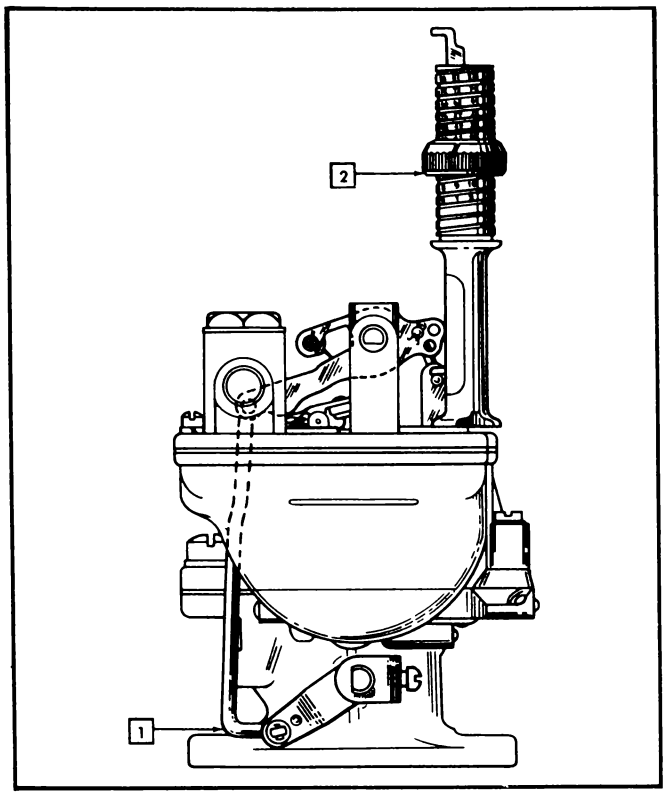
Pump Stroke Adjustment

With the throttle valve seated and the connector link in the upper hole in the pump arm, the pump plunger should travel $^{27}/_{64}$" from the closed position to the wide open position. This pump travel can be measured by using a universal pump stroke gauge T109-117S (Fig. 28). Place the base of the gauge on the ridged portion of the bowl cover so that the indicator ear of the pump gauge rests on the top surface of the connector link at the pump shaft. Hold gauge vertical. The difference between the number shown by the index mark on gauge, at the wide open and closed positions, should be "27", as shown in Figure 28.

This adjustment should be made by bending the throttle connector rod at its lower angle (Fig. 21).

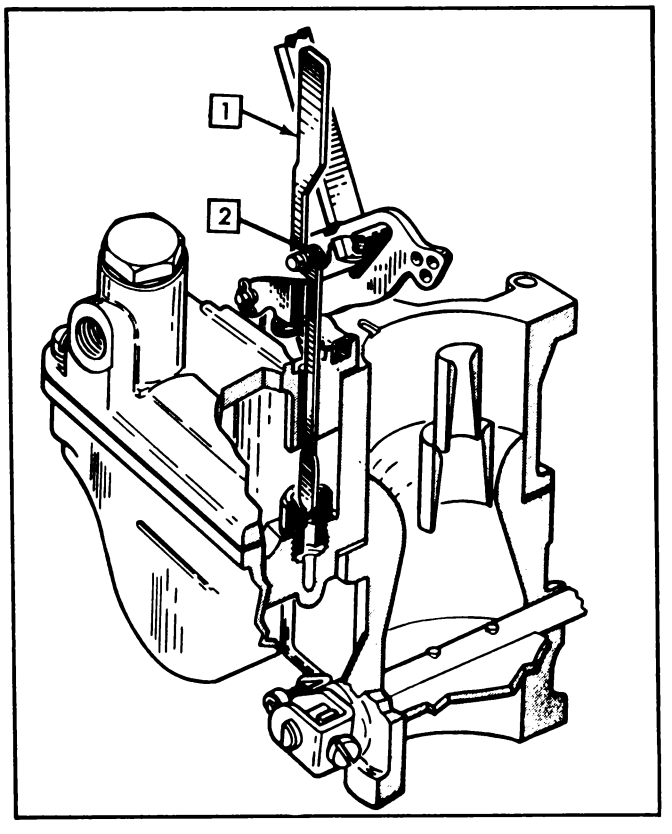
Metering Rod Adjustment

The correct setting of the metering rod is important and must be made after the pump adjustment. Insert gauge (Tool No. T109-102) in place of the metering rod, seating the tapered end in the metering rod jet. Now hold the gauge vertical to insure seating. With the throttle valve seated there should



1. Bend here
2. Tool T109-117S

Figure 28—Pump Stroke Adjustment.



1. Tool 109-102
2. Less than .005" clearance

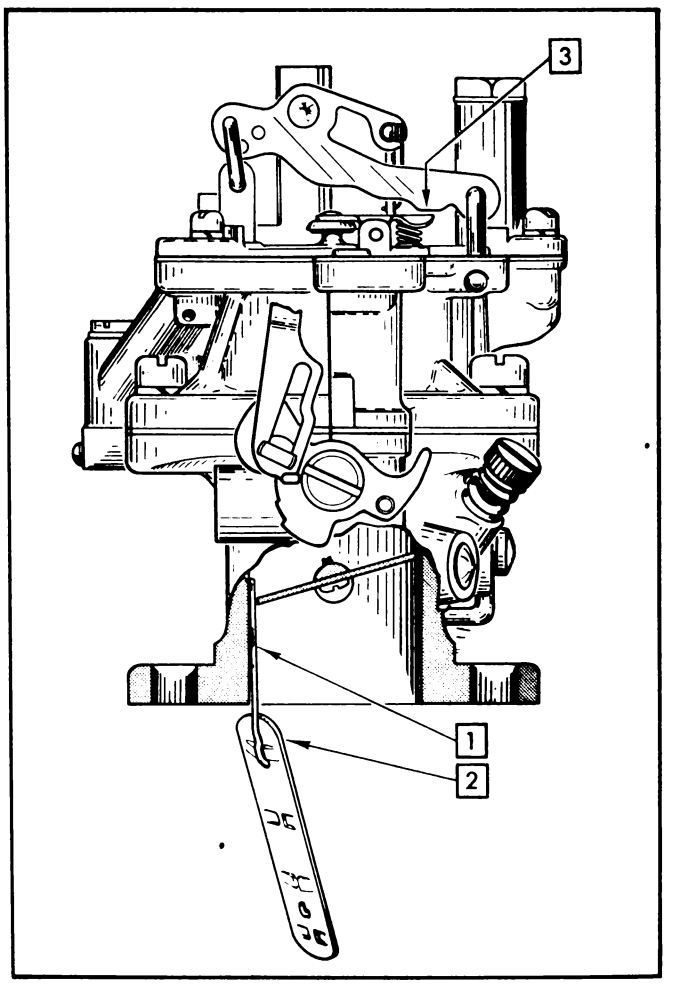
Figure 29—Metering Rod Adjustment.

be less than .005" clearance between the pin in the pump arm and the shoulder of the notch in gauge (Fig. 29). The gauge should not drag on the pin. Adjust by bending the metering rod pin portion of the pump arm up or down.

Remove the gauge, and install the metering rod and disc. Connect the metering rod spring.

Anti-Percolator Adjustment

Crack the throttle valve .020" by placing gauge T109-29 between the valve and the bore of carburetor (side opposite port). (Fig. 30). Now bend the rocker arm (use Tool T109-105) until there is a clearance of .005" to .015" between the rocker arm and the pump arm.



1. .020"
2. Tool T109-29
3. $\frac{.005"}{.015"}$ clearance

Figure 30—Anti-Percolator Adjustment.

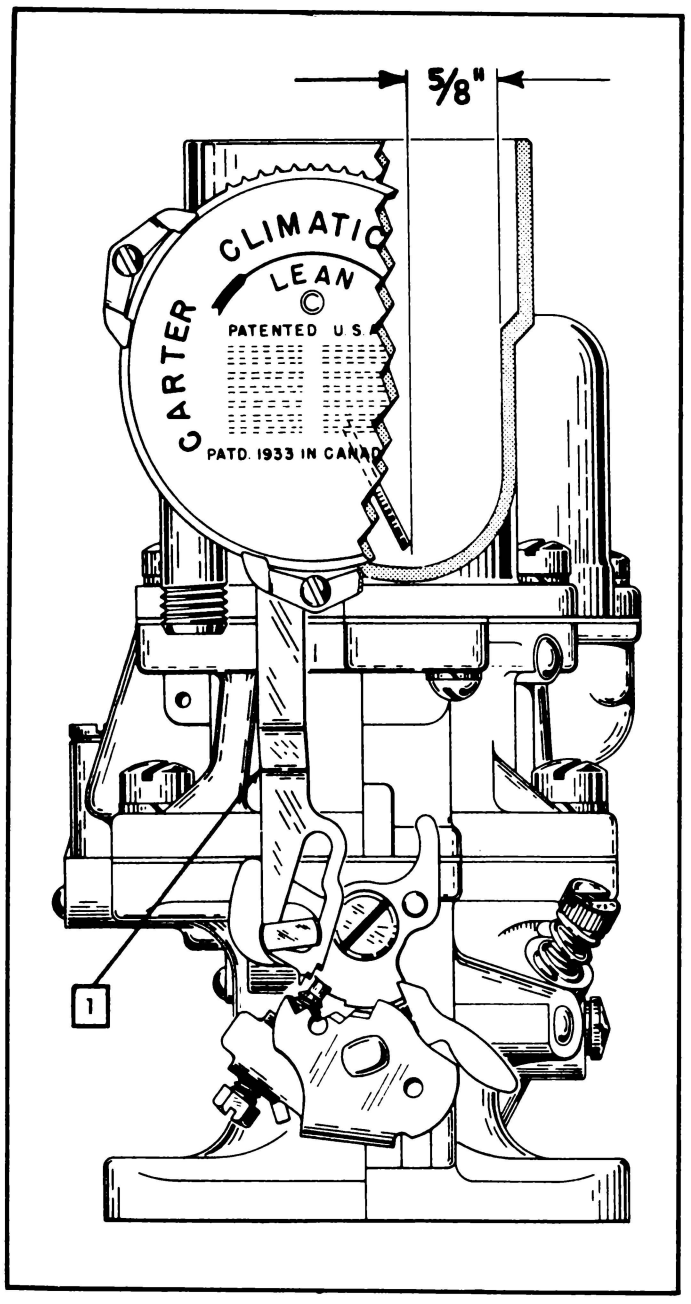
Fast Idle Adjustment

With the fast idle cam held in the normal idle position, tighten the throttle lever adjusting screw until

it just seats against the cam. Now hold the throttle lever closed and pull the cam back until the first (or lower) step on the cam is against (not on) the set screw.

There now should be 5/8" clearance between the inside wall of the air horn and the lower edge of the choke valve. (Use Tool T109-85).

This adjustment can be made by bending the fast idle link at offset. (Use Tool T109-41). See Figure 31.

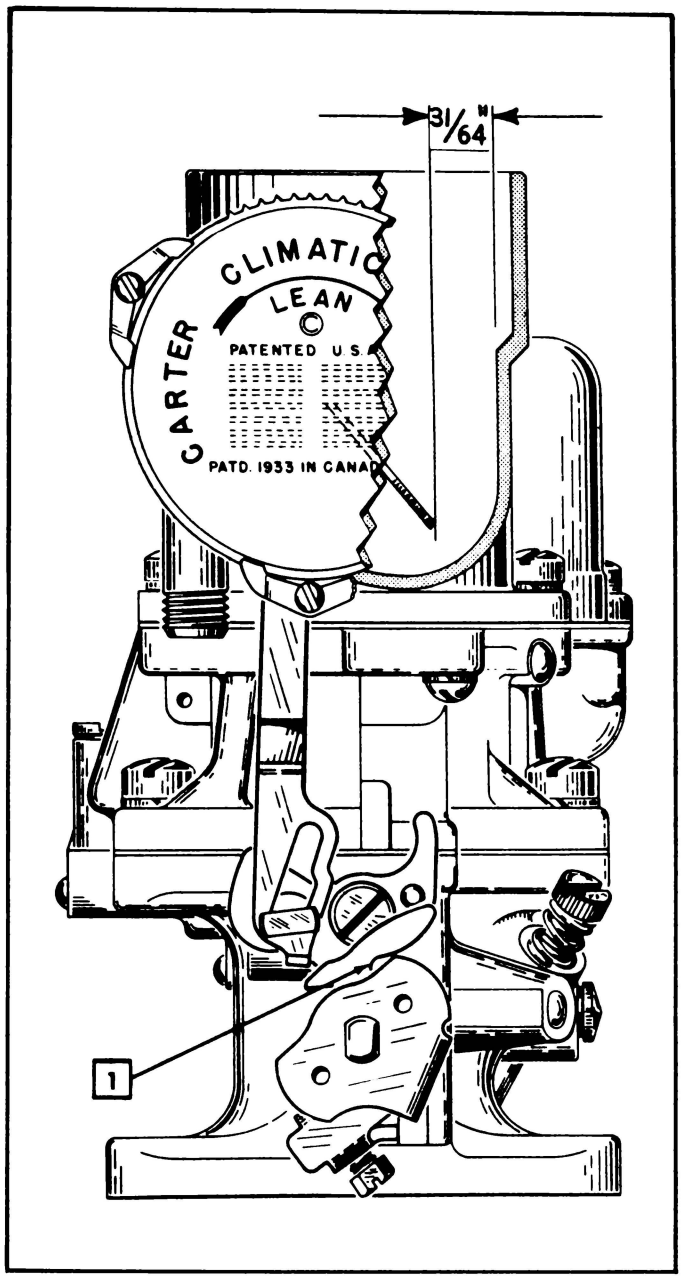


1. Bend here

Figure 31—Fast Idle Adjustment.

Unloader Adjustment

With the throttle valve wide open there should be 31/64" clearance between the lower edge of the choke valve and the inner wall of the air horn. (Use Tool T109-82). This adjustment should be made by the bending cam on the throttle lever. (Use Tool T109-41). See Figure 32.



1. 31/64" clearance
2. Bend

Figure 32—Unloader Adjustment.

Lockout Adjustment

With the throttle and choke valves wide open, the choke should lock in this open position. Adjustment should be made by bending the lip at the lower end of the fast idle link to give 1/32" clearance between the lip and the throttle lever lock. (Use Tool T109-105.)

Climatic Control Adjustment

For average driving and climatic conditions, the coil housing should be set at the index, Figure 33.

The action of the climatic control during the warm-up period is affected by the grade of fuel used.

This adjustment must be made with the carburetor on the car. Between adjustments the MOTOR MUST BE THOROUGHLY COOLED OFF. At least four hours should be used to cool off a motor.

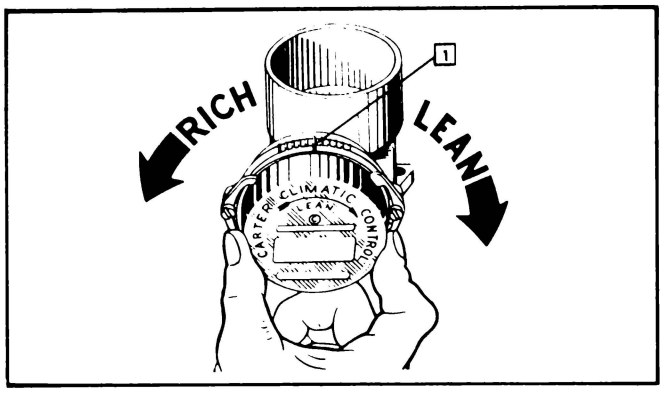


Figure 33—Climatic Control Adjustment.

EXHAUST SYSTEM

EXHAUST SYSTEM

"Ambassador 6" Series

On this Series the exhaust pipe forms a "U" around the front of the engine, beginning at the left side (Fig. 34). It passes down the right side of the engine compartment toward the rear and down to the muffler beneath the underbody. After the carburetor, air cleaner and radiator expansion tank upper hose are removed, the exhaust pipe can be readily removed.

1949 "600" and "Ambassador 6" Series

Mufflers of the oval type are used to make more efficient use of the reduced space under the lowered body floor. The mufflers are supported from the body by two fabric straps which prevent transmission of the exhaust vibration to the body as shown in Figures 35 and 36.

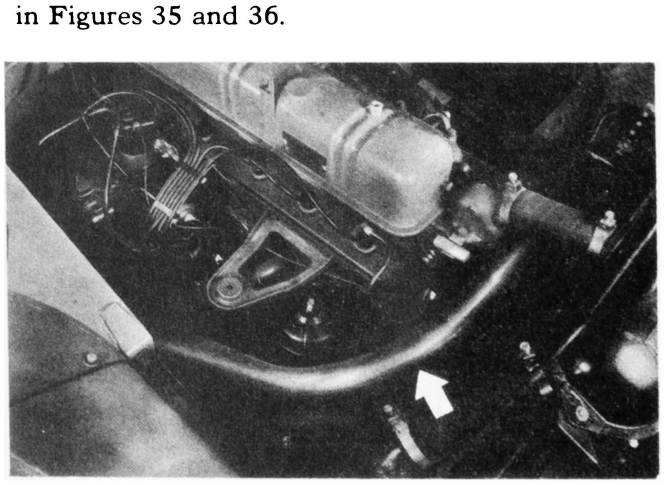


Figure 34—"Ambassador 6" Series Exhaust Pipe.

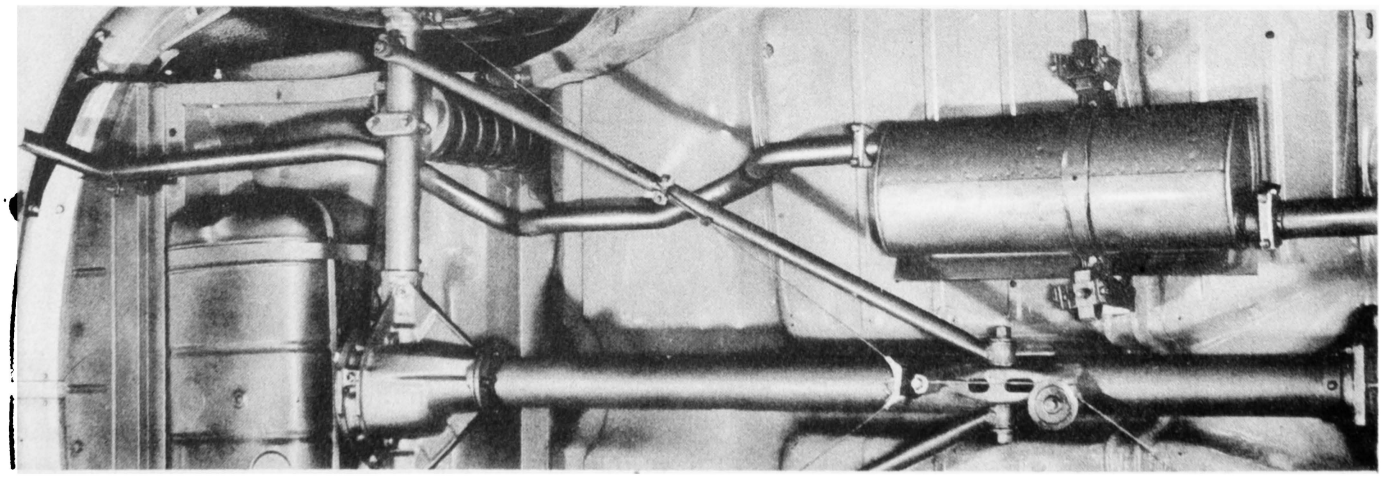


Figure 35—Exhaust Muffler and Attaching Parts.

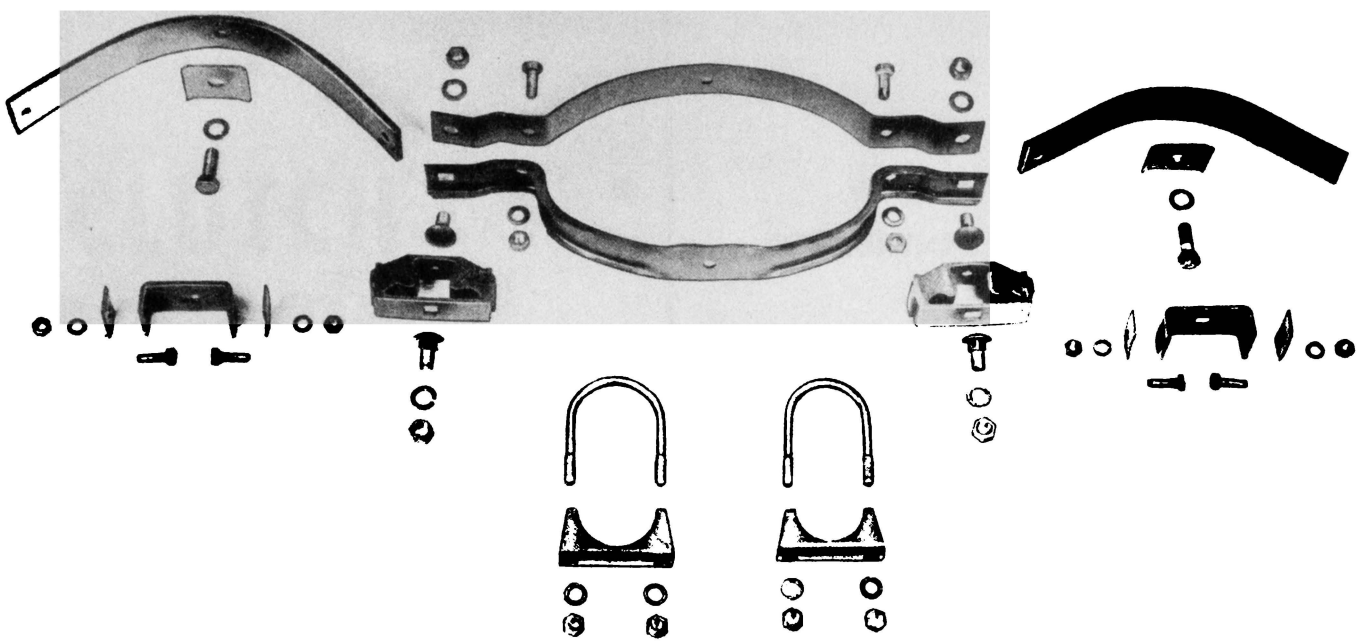
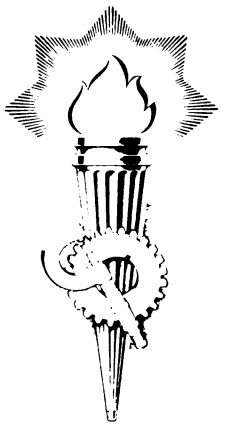


Figure 36—Exhaust Muffler Attaching Parts.

CLUTCH SECTION



Nash

TECHNICAL SERVICE MANUAL

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September 1, 1948

CLUTCH SECTION

NASH TECHNICAL SERVICE MANUAL

DESCRIPTION

1949 "600" and "Ambassador 6" Series

The clutch is a single plate, dry disc type (Borg and Beck). A steel cover bolted to the flywheel contains the clutch drive plate, the pressure plate, clutch levers and springs (Fig. 1).



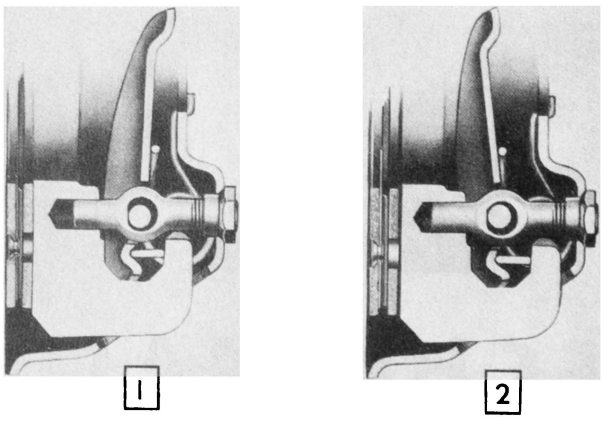
Figure 1—"600" Series Clutch.

The clutch drive plate is spring cushioned with a facing riveted to both sides. The coil springs around the hub absorb the power shocks and cushion the driving mechanism.

The clutch throw-out bearing is of the ball type, packed at the factory, and requires no further lubrication.

No adjustment for wear is provided in the clutch itself. An individual adjustment is built into the clutch cover to adjust the height of the release levers in manufacture, but this adjusting nut is locked in position and should never be disturbed unless the clutch assembly has been disassembled for the replacement of worn parts.

When the clutch pedal is depressed, the release bearing is moved toward the flywheel, and contacts the inner ends of the release levers. Each lever is pivoted on a floating pin which remains stationary in the lever and rolls across a short flat portion of the enlarged hole in the eyebolt. The outer ends of the eyebolts extend through holes in the stamped cover and are fitted with adjusting nuts to secure the levers in the correct position. The outer ends of the release levers engage the pressure plate lugs by means of fulcrums, which provide knife-edge contact between the outer ends of the levers and the lugs (Fig. 2).



1. Engaged position 2. Released position

Figure 2—Clutch Lever.

SERVICING THE CLUTCH

1949 "600" and "Ambassador 6" Series

Removing the Clutch

Always mark the clutch cover, pressure plate and flywheel before removing, so that when they are reassembled they will be in their same relative positions (Fig. 1). A good service craftsman takes this precaution to maintain balance. If new parts are installed they are held within good balance limits in manufacture.

CAUTION: *When removing clutch cover from the flywheel loosen each cap screw a few turns,*

until the spring tension on the cover has been released. The clutch cover is a steel stamping which could be sprung by incorrect removal, resulting in clutch chatter when re-used.

Crankshaft Pilot Bushing

When a clutch assembly is removed from the flywheel always inspect the crankshaft pilot bushing for loose or scored condition. If replacement is required, use clutch pilot bushing removing tool (J-1418-A). To provide initial lubrication for this bushing, coat lightly with a short-fiber, medium wheel bearing grease.

CLUTCH DISASSEMBLY

The clutch cover and pressure plate are under spring tension at all times. Therefore care should be exercised when a clutch cover assembly is disassembled. Place the clutch cover assembly in an arbor press with a hard wood block under the pressure plate. Have the block of such a length that the cover can move down and not interfere with the block. Place a wood block across the top of the cover so that it rests on the spring bosses and does not interfere with the eye-bolt adjusting nuts (Fig. 3).

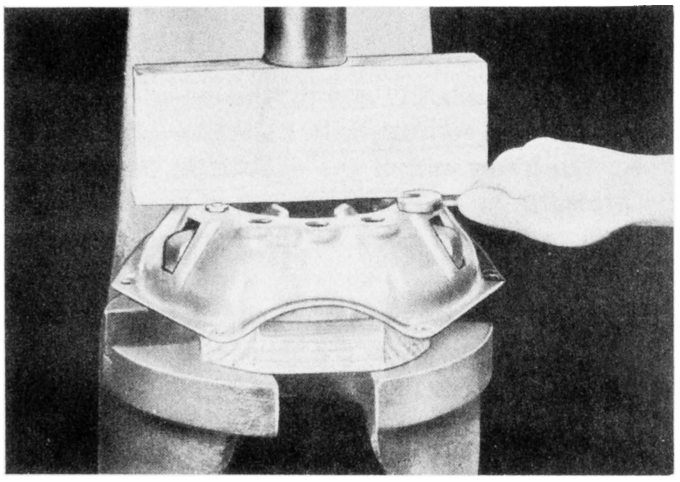


Figure 3—Compress Springs to Remove Nuts.

Compress the clutch cover in the press until the clutch release levers are free. Remove the adjusting nuts (Fig. 3). Release the press slowly to prevent the springs from flying out.

CAUTION: *When relieving the spring pressure be sure the cover does not stick on the pressure plate bosses. Lift off the cover for inspection of parts.*

Clutch Pressure Springs

A thorough inspection of the clutch assembly springs should always be made. They should be tested for spring tension when the spring is compressed to a given length. (See Clutch Pressure Spring Specifications for the correct spring heights.)

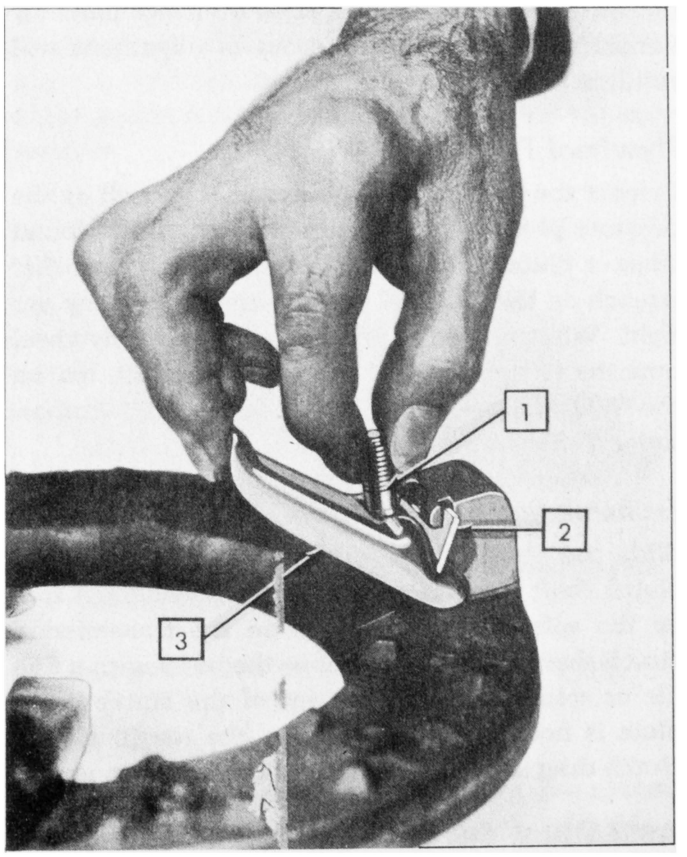
CLUTCH PRESSURE SPRING SPECIFICATIONS

Series	*No. of Springs*	*Compressed Length*
"600"	6	195# ± 5 at 1½"
"Ambassador 6"	9	155# ± 5 at 1-11/16"

Clutch Adjusting Levers

A thorough inspection should be given the levers, the eyebolt pin and the fulcrum. If they show any wear replace them.

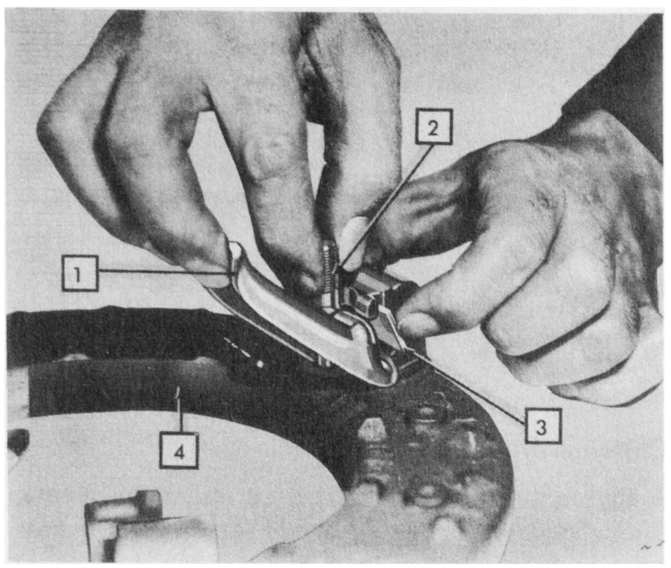
To remove the release levers, grasp a lever and eyebolt between the thumb and fingers so that the inner end of the lever and the upper end of the eyebolt are as near together as possible. Keep the eyebolt pin seated in its socket in the lever (Fig. 4).



1. Eyebolt 2. Fulcrum 3. Lever

Figure 4—Remove Levers.

Lift the fulcrum over the ridge on the end of the lever. Lift the lever and eyebolt off the pressure plate (Fig. 5).



1. Lever
2. Eyebolt
3. Fulcrum
4. Pressure plate

Figure 5—Lift Lever and Eyebolt Off Pressure Plate.

Clutch Pressure Plate

Inspect the pressure plate to make sure that it is not warped or cracked. Check on a surface plate for flatness, as a pressure plate out of alignment will result in clutch chatter.

Flywheel Face

Inspect the condition of the flywheel as well as the pressure plate for any roughness, a condition found when a clutch has been overheated. Put a socket wrench on the flywheel bolts to make sure they are tight. When a torque wrench is used on flywheel nuts the torque should be from 50 to 55 ft. lbs. on the "600" Series—95 to 100 ft. lbs. on the "Ambassador 6" Series.

Transmission Clutch Shaft

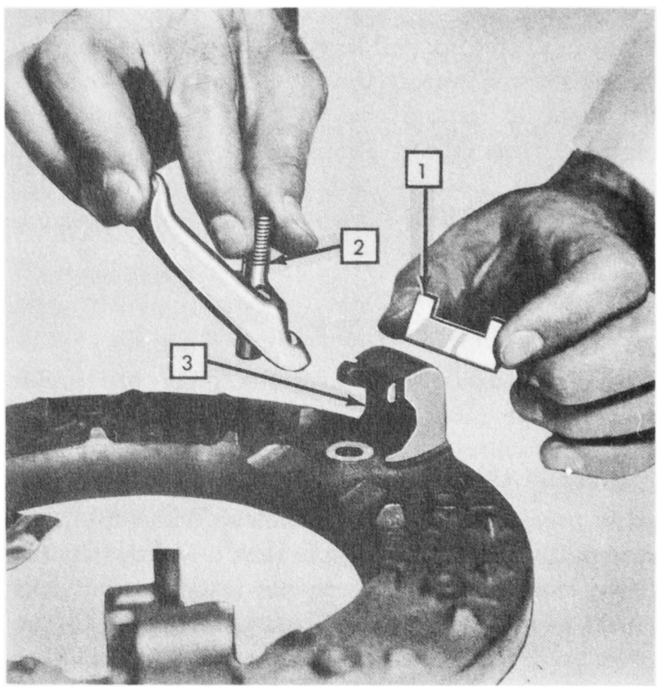
Slide the clutch drive disc onto the transmission clutch shaft to make sure that its movement is free on the splines. If the splines on the transmission clutch shaft are burred, remove the burrs with a fine file or stone. If the movement of the clutch drive plate is not free on the splines, the result will be clutch drag and hard shifting of transmission gears.

ASSEMBLY OF CLUTCH

Prior to assembly apply a small amount of Lubriplate to each side of the pressure plate lug.

Lay the pressure plate on the block in the press.

Assemble a lever, eyebolt and pin, holding the lever and eyebolt as close together as possible. With the other hand grasp the fulcrum as shown in Figure 6.



1. Fulcrum
2. Eyebolt
3. Pressure plate lug

Figure 6—Install Levers.

Insert the fulcrum in the slots of the pressure plate lug. Drop slightly and tilt the lower edge until it touches the vertical milled surface of the lug. Insert the lower end of the eyebolt in the hole in the pressure plate. The short end of the lever will then be under the hook of the lug and near the fulcrum.

Slide the fulcrum upward in the slots of the lug. Lift it over the ridge on the short end of the lever and drop it into the groove in the lever (Fig. 6).

Assembly of Springs and Cover

(See Clutch Pressure Spring Specifications.) After all levers are installed, place the clutch pressure springs in a vertical position on each spring boss. (In the "600" Series the center spring boss in each group is not used.)

Check the anti-rattle springs in the clutch cover and place the cover on top of the pressure plate assembly. See that the top of each pressure spring enters its spring seat in the cover. (Line up punch marks on cover and pressure plate for balance.) (Fig. 1.)

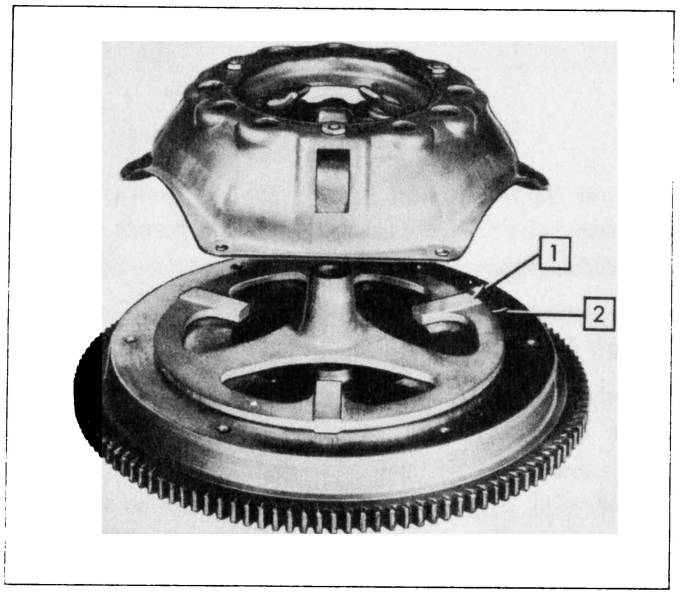
Slowly compress the cover, making sure that the eyebolts and pressure plate lugs are guided through the proper holes in the cover.

Hold the clutch under compression and screw down the adjusting nuts until they are flush with the tops of the eyebolts. Release the spindle of the press.

Clutch Lever Adjustment

IMPORTANT: *Always inspect release lever height adjustment when installing a new or relined clutch drive plate.*

Place the clutch gauge plate (J-1507) on the flywheel in the position normally occupied by the drive plate. Mount the cover assembly, center the plate and line up the three machined lands on the gauge plate directly under the levers (Fig. 7).



1. Gauge plate 2. Machined land

Figure 7—Clutch Gauge Plate (J-1507)

Tighten the cover screws in rotation, one to two turns at a time, to avoid distortion of the cover.

Each lever should be depressed several times before checking. This will seat the levers in their operating positions (Fig. 8).

1949 "600" Series

The lever height adjustment for the clutch plate used in production is 1/32" above the center hub of the tool (J-1507). The .025" spacer between the cushion springs and facings as used in production has been eliminated from the service replacement plate. Therefore, the lever height setting is 1/16" *below* the center hub of the tool (J-1507) when the

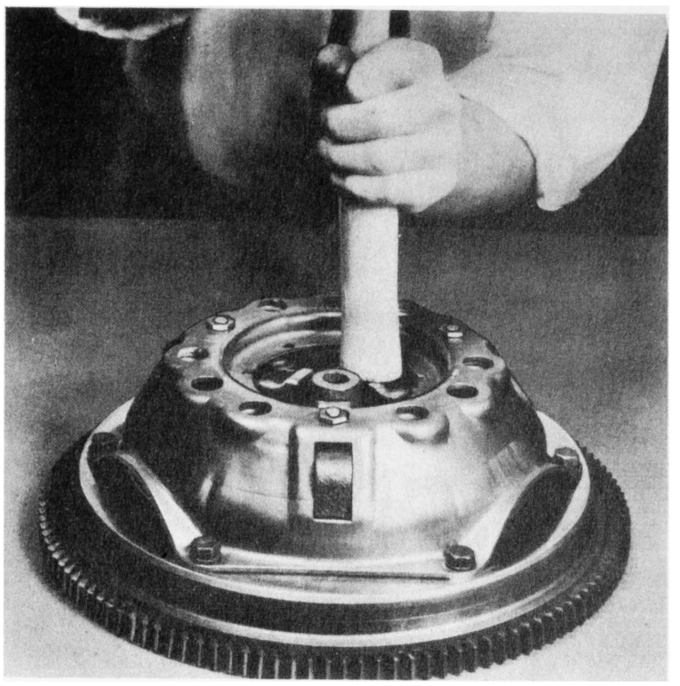
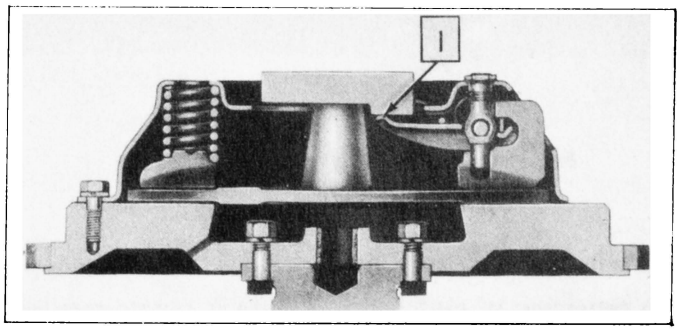


Figure 8—Each Lever Should be Depressed Several Times with a Hammer Handle to Settle all Parts in their Proper Positions.

service replacement plate is being installed or refaced.

Place the gauge on the hub (Fig. 9) so that the offset of the gauge is down 1/16" below the hub, as shown. To check the lever, turn the lever adjusting nut until the lever is flush with the under side of the gauge. Adjust the other two levers in the same manner.

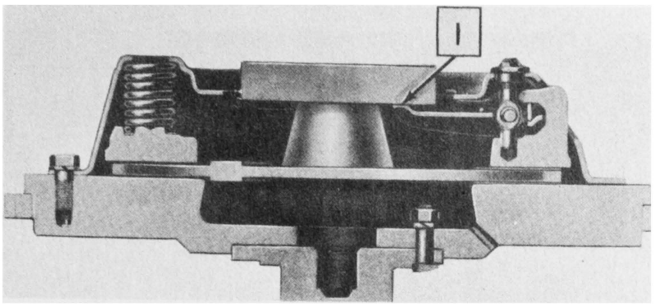


1. 1/16" below hub. (Service plate replacement lever height setting.)

Figure 9—"600" Series Clutch Lever Height.

1949 "Ambassador 6" Series

The lever adjustment is made in the same manner as on the "600" Series, but with the straight side of the gauge down so that the levers are adjusted flush with the hub (Fig. 10).

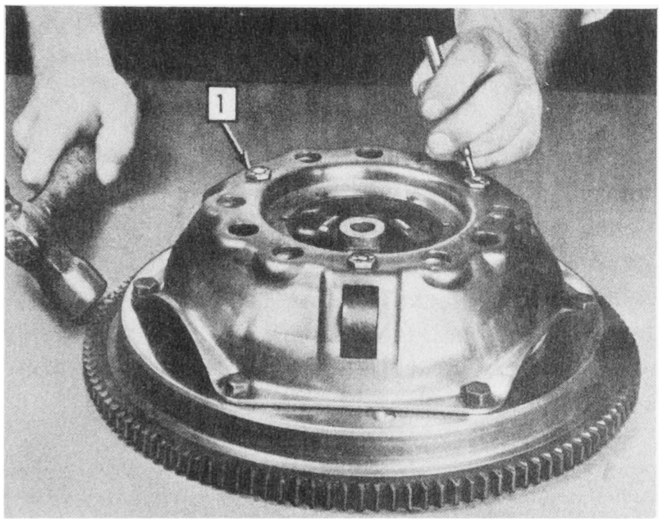


1. Flush with hub

Figure 10—"Ambassador 6" Series Clutch Lever Height.

Locking Adjusting Nuts

Before staking the adjusting nuts to lock them in place, work the lever up and down and recheck lever adjustment again. Stake the nut with a dull punch (Fig. 11).



1. Adjusting nuts

Figure 11—Locking Adjusting Nuts ("600" Series Shown).

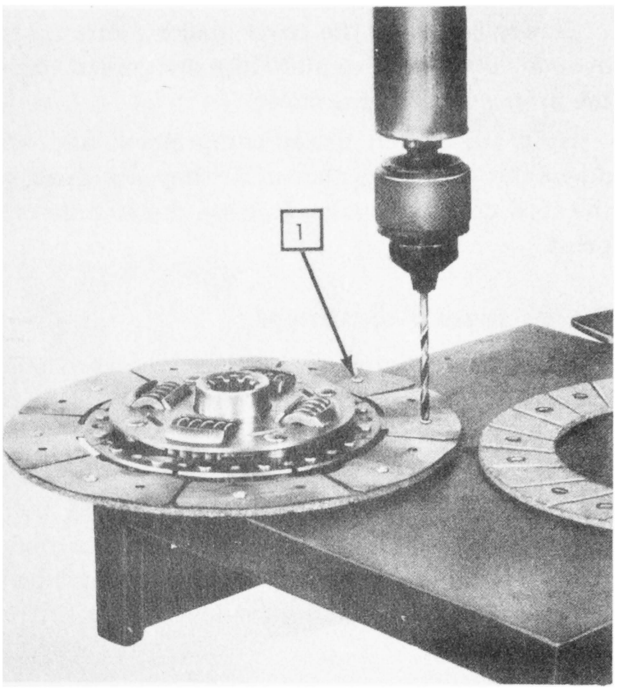
Clutch Drive Plate

No repairing of clutch drive plate is recommended except replacement of facings.

A new plate should be installed if the plate or cushion springs appear to be defective. The cushion springs must not be bent out of shape or flattened.

In removing old facings, the rivets should be drilled, not punched out (Fig. 12). Use a drill size that will cut out the roll of the rivet.

To assemble facings, place one facing on the flywheel side of the driven plate. Line up the countersunk holes with rivet holes in the cushion spring.



1. Rivets

Figure 12—Drill Out Rivets.

Rivet each cushion spring to the facing before installing the other facing. *Roll the rivets against the cushion spring. Do not split them.*

Clutch Installation

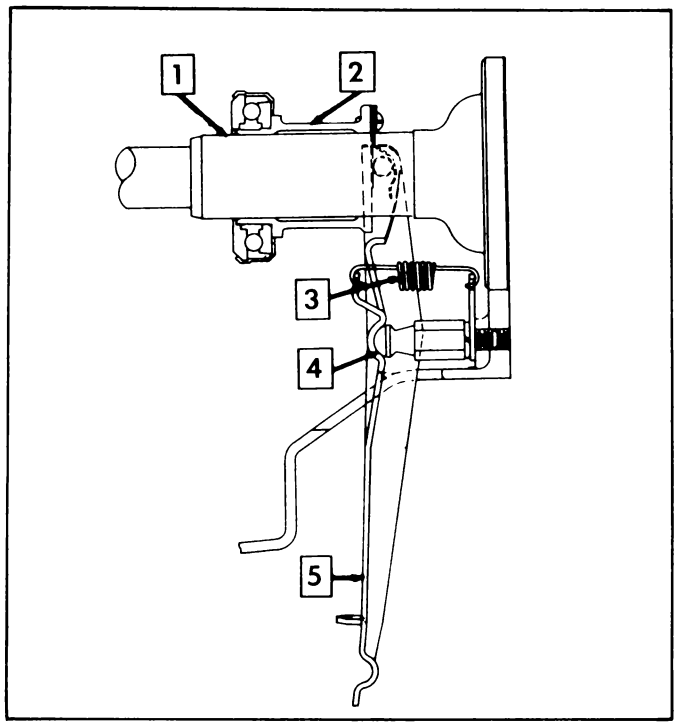
In order to install the clutch drive plate and clutch cover assembly, use aligning tool J-1625. Align index marks.

This tool aligns the clutch drive plate so that the transmission clutch shaft will enter easily. Make sure that the clutch pedal is not depressed until the transmission has been installed as the plate will drop out of alignment position.

Clutch Throw-Out Release Bearing

The clutch throw-out or release mechanism consists of a forked lever which pivots on a ball stud threaded into the clutch housing. A throw-out lever return spring, as shown in Figure 13, is anchored to a clip under the ball stud and holds the lever in contact with the ball stud. The clutch throw-out bearing, which is a pre-lubricated unit, is attached to the forked end of the throw-out lever by a spring clip on the bearing.

Never wash the clutch throw-out release bearing in gasoline or any solvent that will dissolve the lubricant. It is neither necessary nor possible to lubricate these bearings at any time.



1. Transmission front bearing cap
2. Release bearing sleeve assembly
3. Throw-out lever return spring
4. Pivot ball stud
5. Throw-out lever

Figure 13—Clutch Release ("Ambassador 6" Series).

Clutch Pedal Linkage

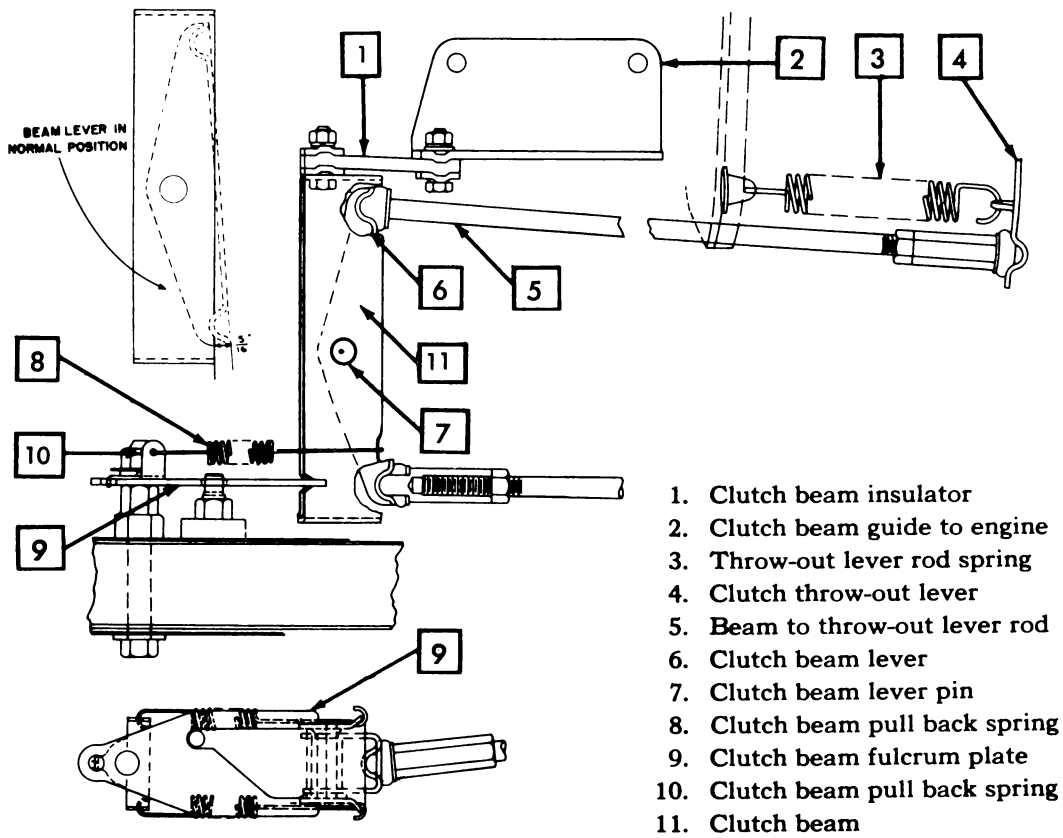
A beam type clutch release linkage is used in the "600" and "Ambassador 6" Series (Fig. 14).

Adjustment for free pedal play is made by varying the length of the beam to the throw-out lever rod (rod No. 5, Fig. 14). Lengthening this rod reduces the free pedal play. Shortening the rod increases the pedal play.

In order to provide sufficient free movement of the clutch throw-out bearing when the clutch is engaged and the clutch pedal fully released, free pedal play should be maintained at ½" to ¾" at all times.

The clutch pedal to beam rod is used only as an initial, or production, adjustment to provide proper leverage. This adjustment is made so that the outer end of the lever projects 5/16" from the beam, toward the rear, with the clutch pedal against the floor board. The pedal to beam rod should never be disturbed in service.

To lubricate the linkage, disconnect the throw-out lever spring and apply Lubriplate to the ends of the pedal rod and lever rod. Use light oil on the clutch beam lever pivot pin.



1. Clutch beam insulator
2. Clutch beam guide to engine
3. Throw-out lever rod spring
4. Clutch throw-out lever
5. Beam to throw-out lever rod
6. Clutch beam lever
7. Clutch beam lever pin
8. Clutch beam pull back spring
9. Clutch beam fulcrum plate
10. Clutch beam pull back spring anchor
11. Clutch beam

Figure 14—Beam Type Clutch Linkage ("Ambassador 6" Series Shown).

CLUTCH DIAGNOSIS

Clutch Chatter—Chatter may be caused by:

a. *Grease* on the clutch drive plate facings
b. *Binding* of the clutch linkage
c. *Loose* or damaged clutch drive plate facings
d. *Loose* engine mountings
e. *Incorrect* adjustment of clutch pressure levers

Clutch Grabbing—Clutch grabbing may be caused by:

a. *Oil or grease* on clutch drive plate facings
b. *Oil* on pressure plate
c. *Broken* drive plate facing
d. *Broken* pressure plate
e. *Clutch drive plate binding* on transmission clutch shaft

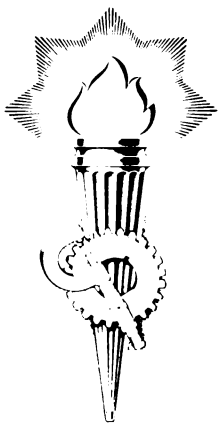
Clutch Slipping—A slipping clutch may be caused by:

a. *Incorrect* adjustment of clutch pedal
b. *Lack* of lubrication in clutch linkage
c. *Broken* clutch pressure springs
d. *Weak* pressure springs

Clutch Dragging—A dragging clutch may be caused by:

a. *Incorrect* adjustment of clutch pedal
b. *Incorrect* pressure lever adjustment
c. *Loose* or broken facings
d. *Bent or dished clutch drive plate* due to overheating

TRANSMISSION and OVERDRIVE SECTION



Nash

TECHNICAL SERVICE MANUAL

Printed in U.S.A.

TRANSMISSION SECTION

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THE "AMBASSADOR 6" SERIES TRANSMISSION—WITH OVERDRIVE

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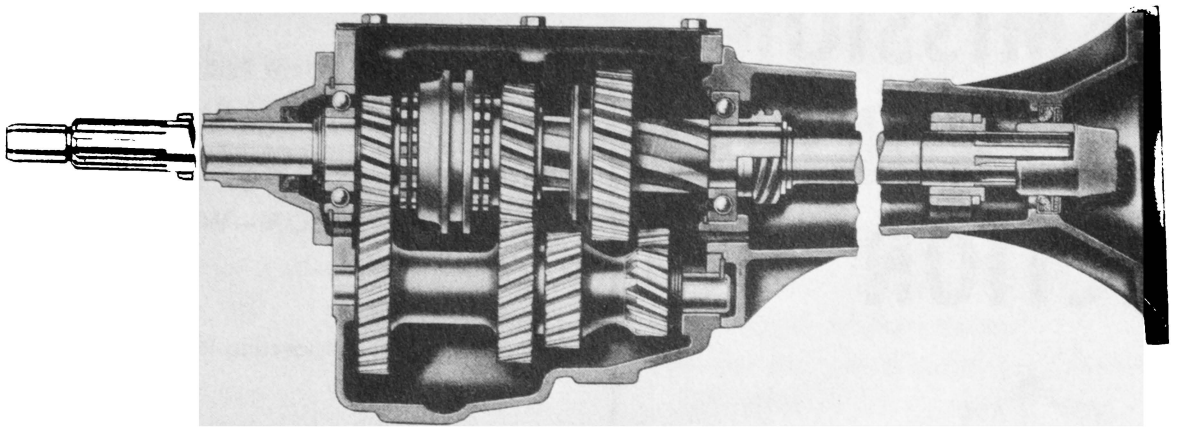
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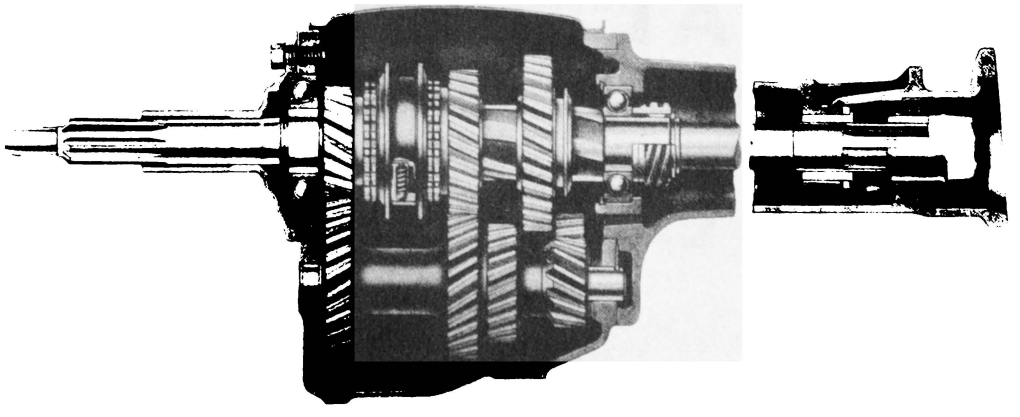
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September 1, 1948



1949 "Ambassador 6" Conventional Transmission and Rear Bearing Cap Extension.



1949 "600" Conventional Transmission and Rear Bearing Cap Extension

TRANSMISSION SECTION

NASH TECHNICAL SERVICE MANUAL

1949 "AMBASSADOR 6" AND "600" SERIES

REMOVING THE 1949 NASH TRANSMISSIONS FROM THE CHASSIS

These series are equipped with torque tube drive.

When removing the transmission from the car, care must be taken not to damage the transmission clutch shaft. Always use two guide-bolts in place of the two upper cap screws so the transmission clutch shaft will slide out far enough to clear the clutch pilot bearing and clutch disc.

THE 1949 "AMBASSADOR 6" SERIES TRANSMISSION

The transmissions used on the "Ambassador 6" Series are supplied with or without the overdrive unit (as optional equipment).

The major design difference affecting overhaul procedure is that the standard transmission (without overdrive) is furnished with a longer main shaft and rear bearing cap to permit the use of one propeller shaft and torque tube on all "Ambassador 6" Series cars.

The overhaul procedure described below will apply to the transmission equipped with overdrive. Differences in procedure occurring with the standard transmission are described near the end of this section.

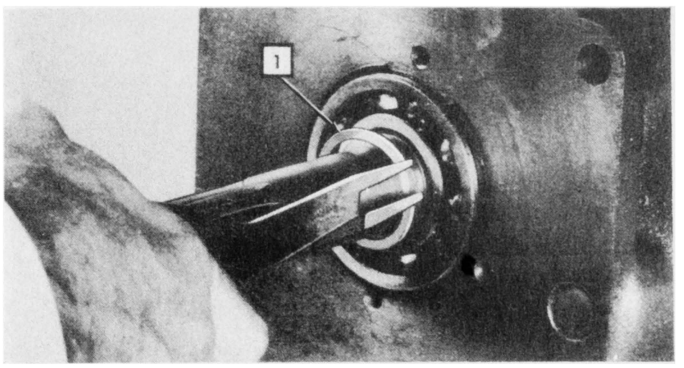
It is not necessary to disassemble both the transmission and the overdrive to overhaul either one. Each unit may be disassembled independently of the other, except when the main shaft or the bearing in the adapter requires replacement.

Disassembling the Transmission

With the transmission assembly completely drained of its lubricant and set up in a transmission stand, remove the case cover, noting the stamping marked "FRONT" on both the cover and the gasket.

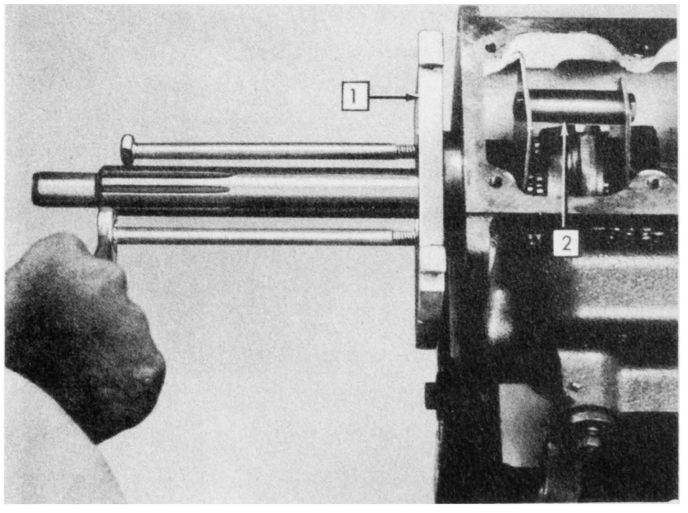
Removing the Clutch Shaft Assembly

After removing the front bearing cap and oil seal, it is necessary to remove the clutch shaft snap ring and bearing snap ring. (Fig. 1.)



1. Snap ring

Figure 1—Use Snap Ring Pliers to Remove the Snap Ring.



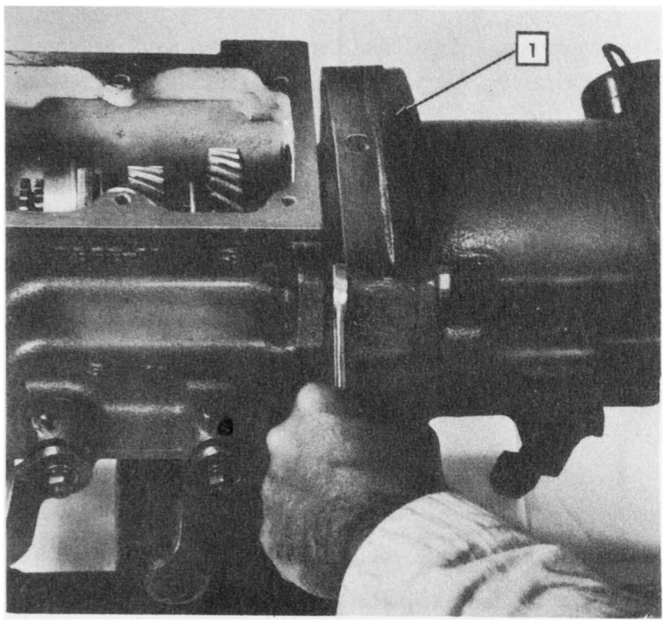
1. Bearing Puller (J-1298-N)
2. Thrust yoke (J-3042)

Figure 2—Use Bearing Puller (J-1298-N) together with Thrust Yoke (J-3042) to Pull the Front Bearing and Prevent Damage to the Synchro-Clutch.

By using the bearing puller (J-1298-N), together with a thrust yoke (J-3042) to prevent damage to the synchronizer clutch, the front bearing can be removed from the clutch shaft. (Fig. 2.)

The oil slinger, being a free fit on the clutch shaft, can then be removed.

Remove the bolts that hold the overdrive and bearing adapter to the transmission case and carefully separate the adapter from the transmission. As they are separated, bolt the adapter to the overdrive to keep the overdrive parts in position. (Fig. 3.)



1. Adapter

Figure 3—Separate the Adapter from the Transmission Case.

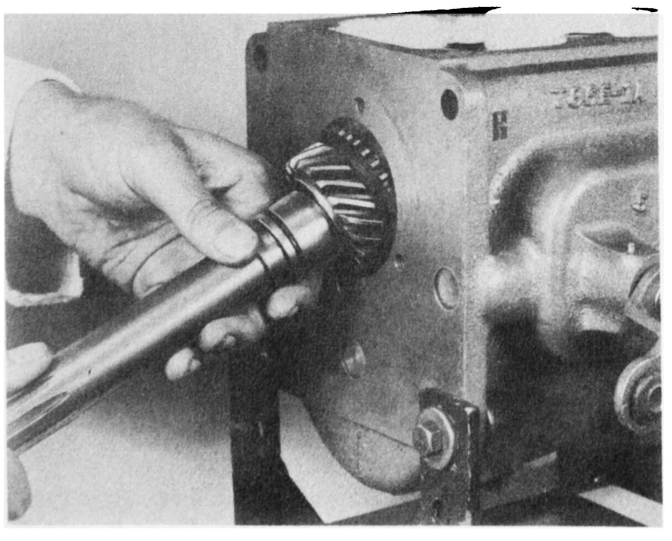


Figure 4—Remove the Clutch Shaft.

By lowering the front end of the clutch shaft and raising the rear end over the countershaft gear, the shaft can be removed from the case. Be careful not to nick the gear teeth as it is being removed. (Fig. 4.)

Clutch Shaft Roller Bearings

Inside the rear end of the clutch shaft are fourteen loose roller bearings. These form the front bearing assembly for the main shaft. Worn or loose rollers will result in a noisy transmission. Inspect for worn, pitted or scored surfaces.

Removing the Main Shaft and Gear Assembly

With the overdrive and adapter separated from the transmission case, move the main shaft assembly to the extreme right hand side of the case and disengage the shifter forks from the sliding gear and the synchro-clutch collar. The main shaft assembly can then be removed through the rear of the case. (Fig. 5.)

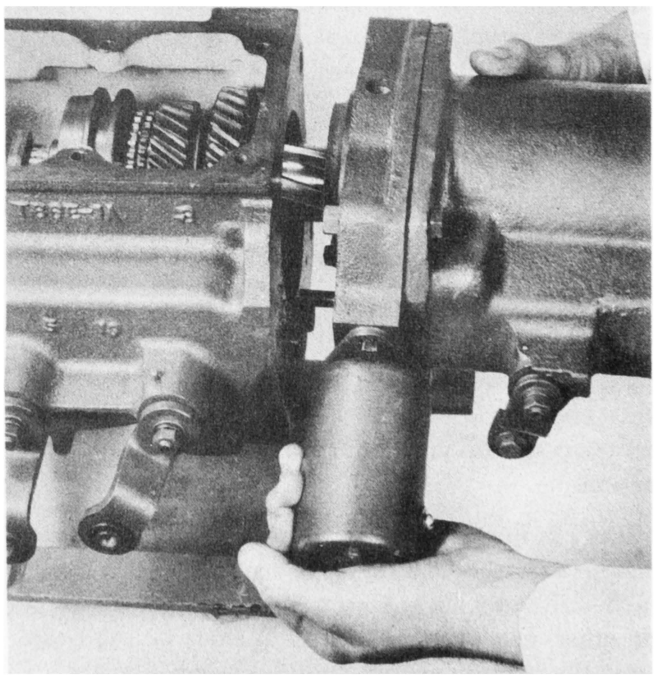
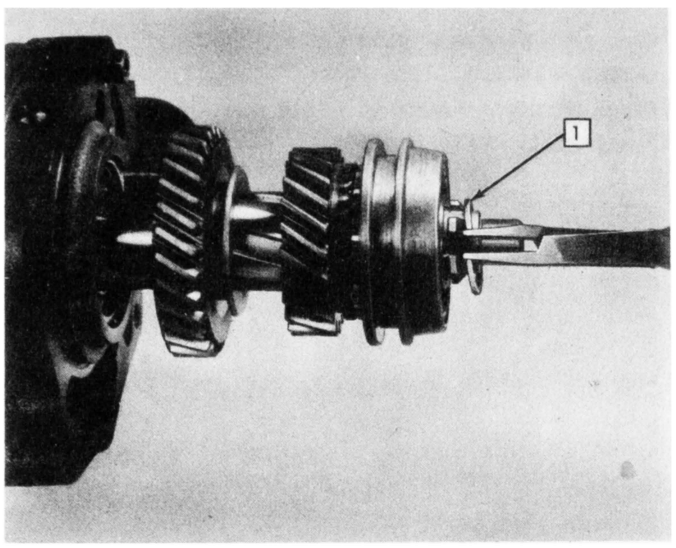


Figure 5—Removing Main Shaft and Gear Assembly.

Removing the Gears from the Spline Shaft

The gears are held on the spline shaft by a snap ring. (Fig. 6.)



1. Spline shaft snap ring

Figure 6—Remove the Spline Shaft Snap Ring.

The Synchronizer Clutch Assembly

Before removing the synchro-clutch assembly, mark the bronze friction rings, sleeve and gear so that all parts of this assembly can be replaced in their original position. (Fig. 7.)

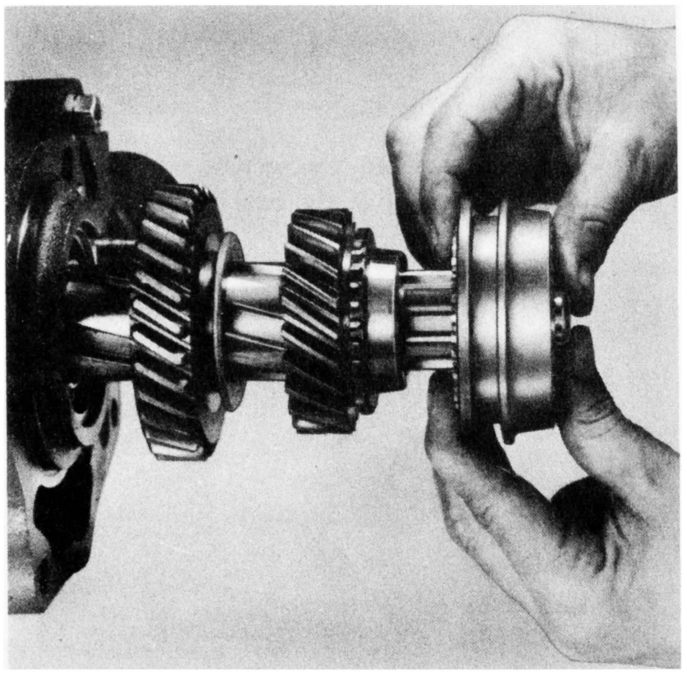


Figure 7—Removing the Synchronizer Clutch Assembly.

The Second, Low and Reverse Sliding Gears

The second speed, low and reverse gears can now be slid off the front end of the spline shaft. (Figs. 8 and 9.)

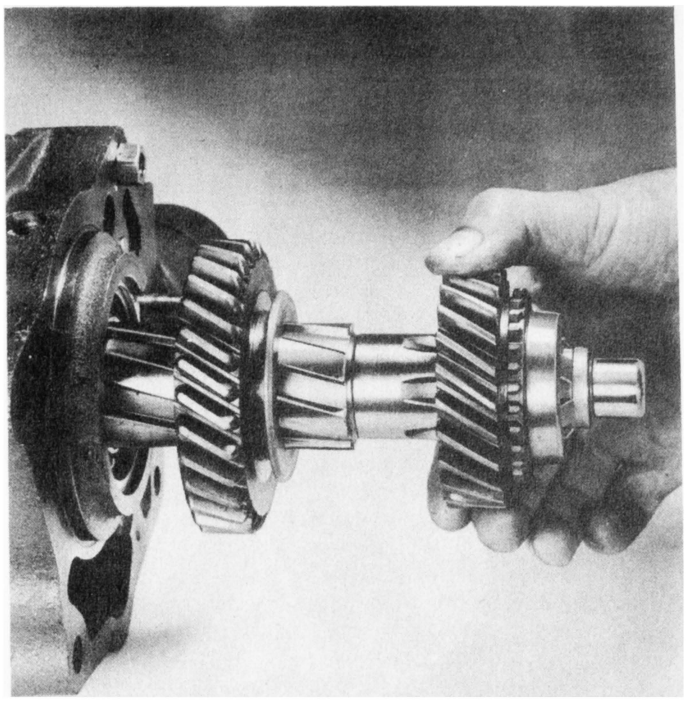


Figure 8—Remove the Second Speed Gear.

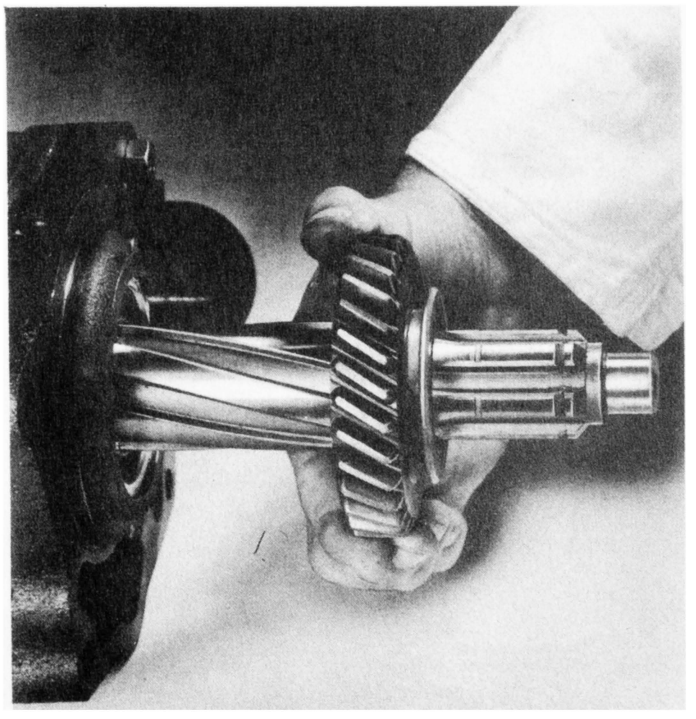
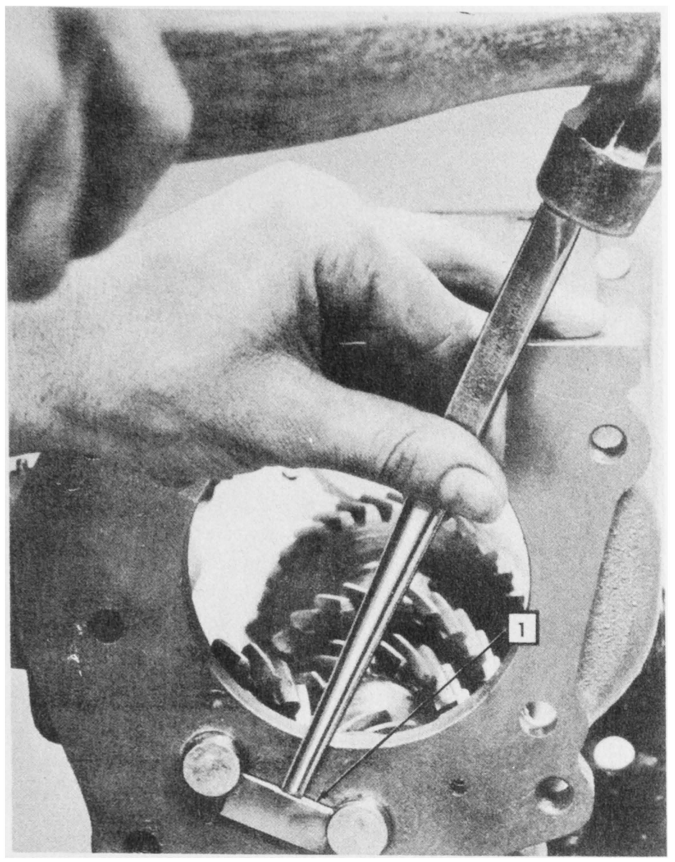


Figure 9—Slide the Low and Reverse Sliding Gear off the Spline Shaft.

Removing the Countershaft Gear Assembly

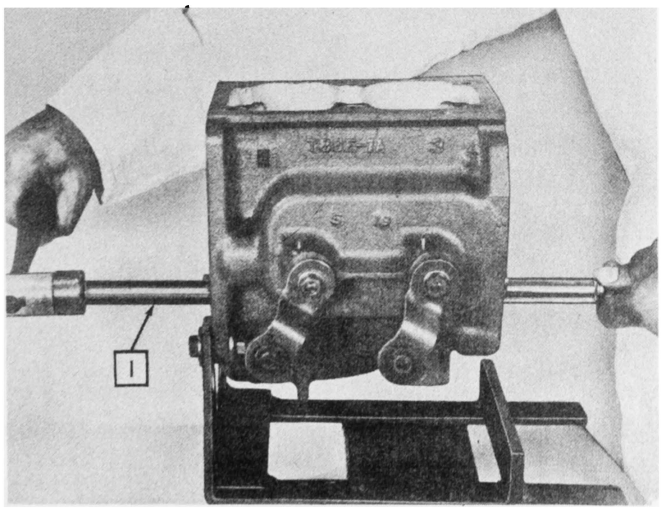
Remove the reverse idler and countershaft lock Plate. (Fig. 10.)



1. Lock plate

Figure 10—Remove the Lock Plate.

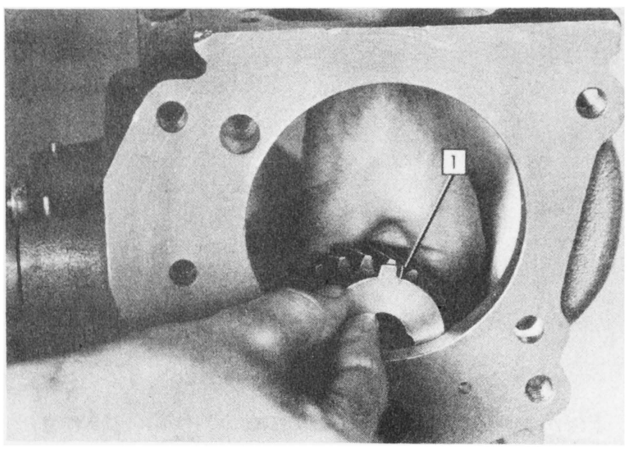
To maintain the position of the needle bearings in the countershaft gear, drive the countershaft out of the rear of the case using a dummy shaft machined to .750" x 7 1/16". (Fig. 11.)



1. Dummy shaft .750" x 7 1/16"

Figure 11—Use a Dummy Shaft Machined to .750" x 7-1/16" to Remove the Countershaft.

Lift out the front thrust washer and then remove the countershaft gear assembly and remaining thrust washers. Note carefully the position of the three thrust washers to avoid misplacement during reassembly. (Fig. 12.)



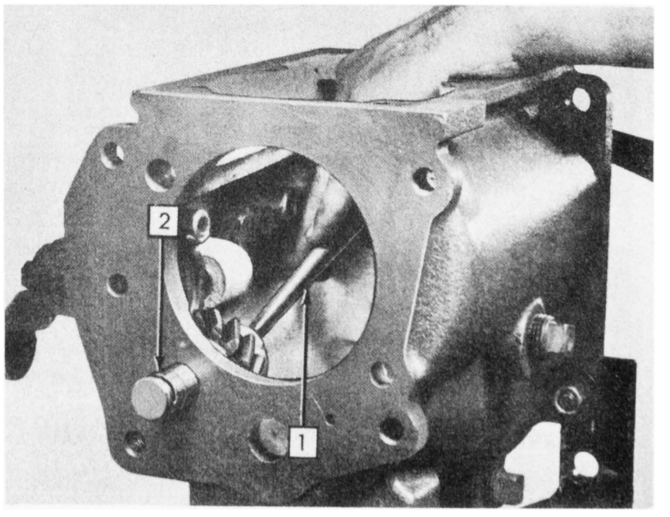
1. Thrust washers

Figure 12—With the Countershaft Removed, the Countershaft Gear and Thrust Washers Can Be Lifted Out.

Inspect these thrust washers. If they are worn, scored or damaged in any manner, replace them.

The Reverse Idler Gear

The reverse idler gear can be removed by driving the shaft out the rear of the case with a brass drift.



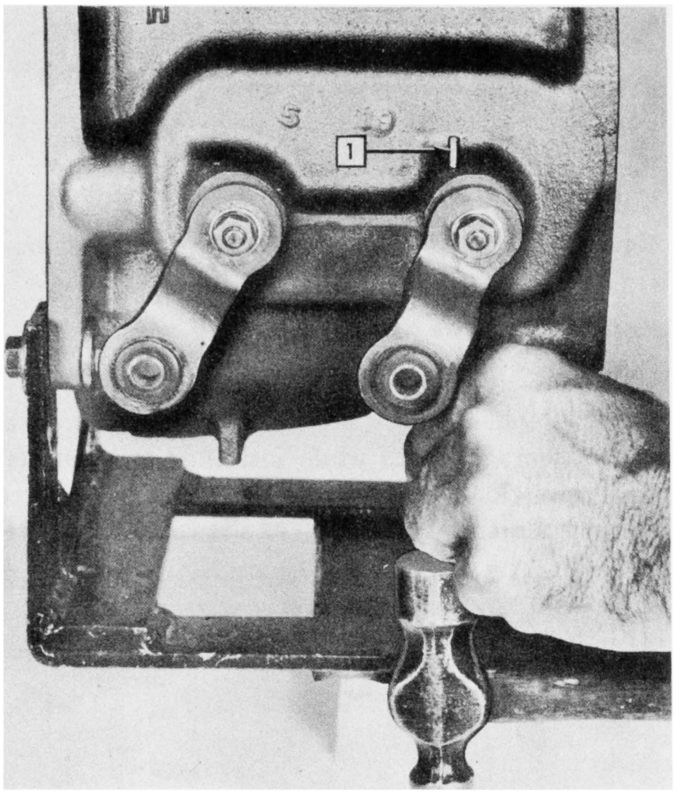
1. Brass drift
2. Idler gear shaft

Figure 13—To Remove the Reverse Idler Gear Shaft, Drive it out the Rear of the Case with a Brass Drift.

Take care not to damage the end of the shaft as you are driving it out. When the shaft is driven out, lift the reverse idler gear from the case. (Fig. 13.)

Removing the Interlock Assembly

Remove the outer shift levers and shifter shaft lock pins. (Fig. 14.)



1. Shifter shaft lock pin

Figure 14—Drive out the Shifter Shaft Lock Pins from the Bottom of the Bosses.

Remove the shifter shafts from the inside of the case slowly to catch the two interlock ball bearings as the shafts are being removed. The oil seals, interlock sleeve and spring and can then be removed.

This completes disassembly of the transmission. If the transmission spline shaft or rear bearing adapter require replacement, refer to the overdrive section for complete disassembly procedure.

Cleaning and Inspecting Parts

With the transmission completely disassembled, all parts should be carefully cleaned so that they can be thoroughly examined.

Gears

Wash all gears in a cleaning solution. Then go over them carefully, checking for worn, cracked or chipped teeth. Slide each gear onto a new shaft to check the fit. If any gear appears to be loose on a new shaft, it must be replaced.

NOTE: *Whenever any transmission gear requires replacement, the gear with which it meshes should be replaced also.*

Bearings

Bearings must be handled with great care. After they have been removed, do not spin them. Wrap them in a clean cloth or paper until they can be washed.

To wash a bearing, submerge it in a cleaning solution that is absolutely free of dirt and rotate it to flush away all oil and dirt. Dry the bearing with care.

Carefully examine each bearing for cracked races or worn or scored balls.

Spline Shaft

Fit the splined gears onto the shaft to be sure they slide on and off easily. They should fit smoothly without excessive play between the splines. If the fit is tight, look for burred edges on the splines.

Synchro-Clutch and Friction Rings

Make a careful inspection of the synchro-clutch and friction rings. Slide the rings on the cones of the second speed gear and the clutch shaft. If you find excessive wear on the taper, replace the rings.

Transmission Case

Examine the surfaces of the bearing recesses in the transmission case for wear or scoring, which indicates that the bearing has been revolving in its housing. Examine the case for cracks or other defects.

Be certain that all parts of the case are thoroughly clean before and during assembly.

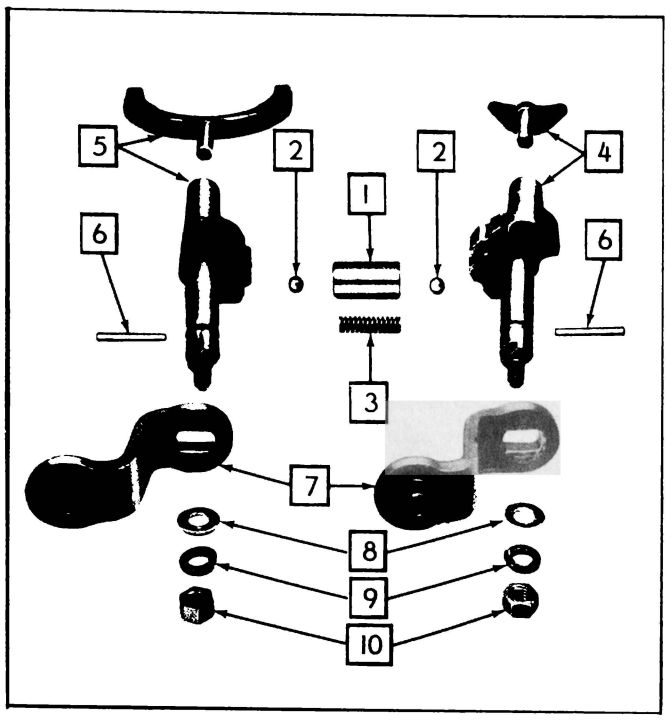
Reassembling the Transmission

When reassembling the transmission, always use new gaskets and oil seals. Follow the assembly sequence outlined below.

Shift Shafts and Levers

Install new shift shaft oil seals. Then reinstall the interlock sleeve, spring and ball bearing and the

low and reverse shift shaft. With the second and high shift shaft installed against the case, place the second ball bearing in position. While compressing the interlock spring with finger pressure, locate the ball in the detent of the quadrant.



1. Interlock sleeve
2. Interlock balls
3. Interlock spring
4. Low and reverse shift shaft and fork
5. High and second shift shaft and fork
6. Locking pins
7. Outer shift shaft levers
8. Washers
9. Lock washers
10. Nuts

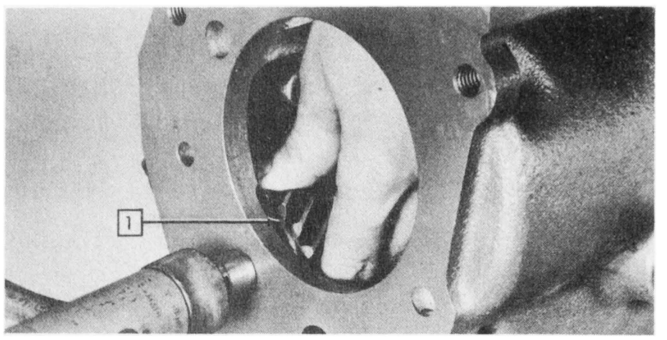
Figure 15—Assembly Sequence of the Shifter Mechanism.

Shift the transmission into any one gear and, with one end of the interlock sleeve against the shifter shaft quadrant, the clearance between the opposite end of the sleeve and the quadrant on the other shaft should be from .001″ to .007″. After installing the correct size sleeve, lock the shift shafts in place with lock pins and install the shift levers.

Now the shift forks can be installed.

Reinstalling the Reverse Idler Gear

Install the reverse idler gear with the chamfered side of the teeth (or the hub section) toward the front of the case. Then drive the reverse idler shaft in from the rear of the case, with the notched end of the shaft toward the rear. The notch should face the countershaft. (Fig. 16.)

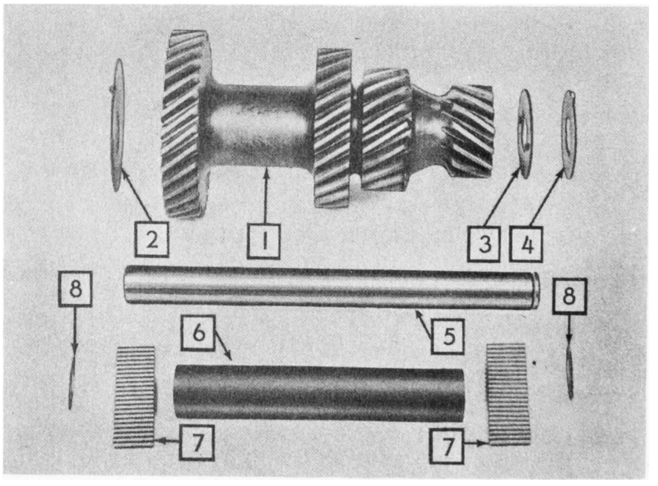


1. Reverse idler gear

Figure 16—The Reverse Idler Gear is Installed First.

Reinstalling the Countershaft Gear and Shaft

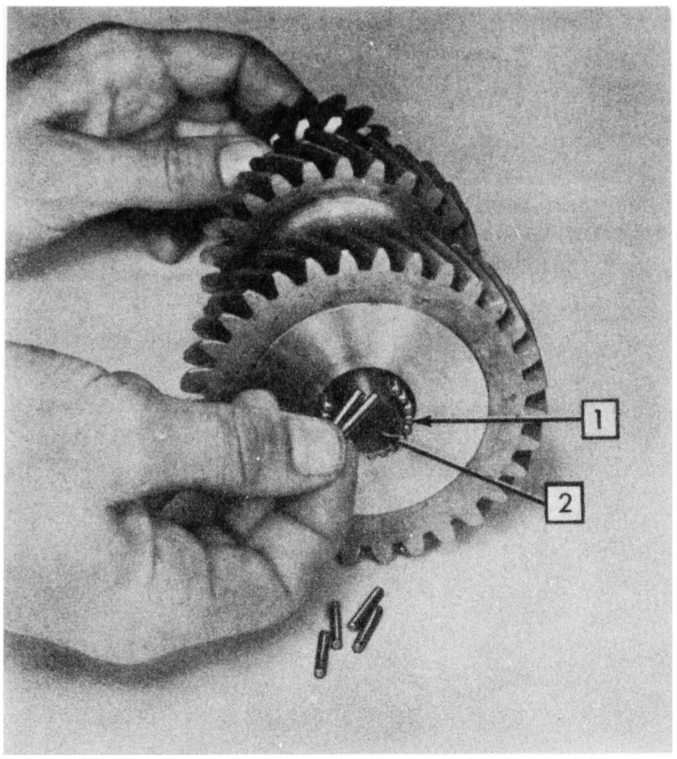
To hold the countershaft needle bearings, spacer and washers in place while installing the countershaft gear, load the countershaft gear by using a dummy shaft .750″ x 7 1/16″, as shown in Figure 18.



1. Countershaft gear
2. Front thrust washer
3. Bronze rear thrust washer
4. Rear thrust washer
5. Countershaft
6. Spacer
7. Needle bearings
8. Bearing rings

Figure 17—Countershaft Assembly Sequence.

After installing the bearings in the countershaft gear, and holding it in such a manner so as not to drop the dummy shaft, install the thrust washers. The two small projections on the face of the bronze

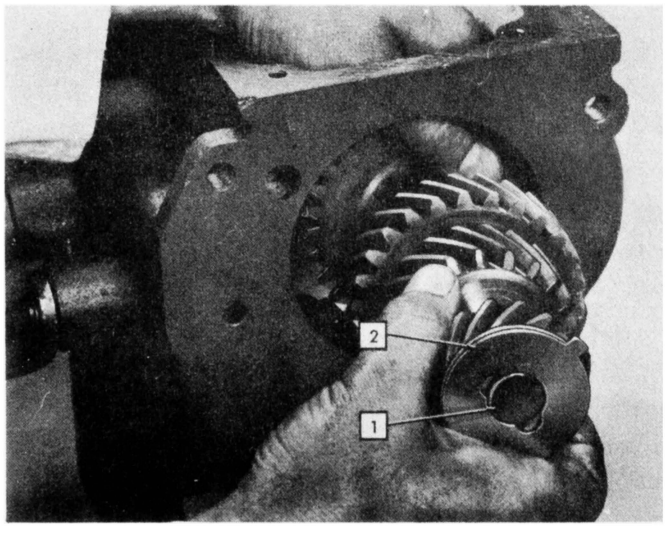


1. Needle bearings
2. Dummy shaft

Figure 18—Loading the Countershaft Gear with the Needle Bearings, Spacer and Washers (Bearing Rings) by Using a Dummy Shaft.

rear thrust washer must index with the grooves in the countershaft gear.

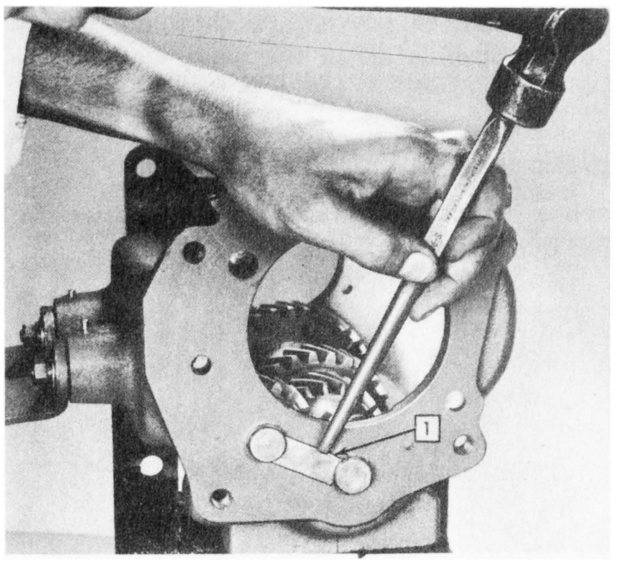
Install the assembly in the case and position the large front thrust washer. (Fig. 19.)



1. Dummy shaft
2. Thrust washers

Figure 19—Install the Countershaft Gear Assembly in the Transmission.

The countershaft can be driven in from the rear of the case after aligning the slots in the countershaft and the reverse idler shaft. Then, insert the lock plate in position (Fig. 20).

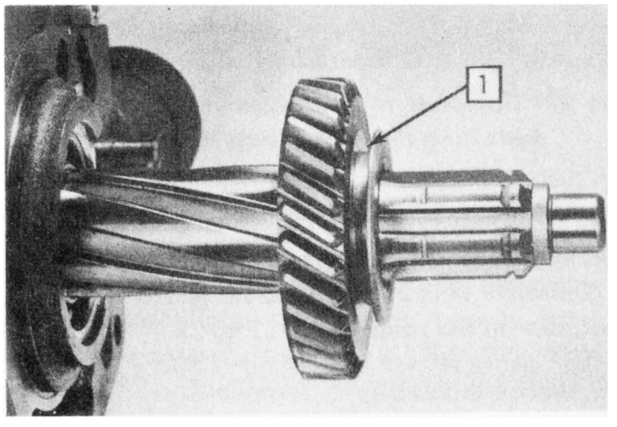


1. Lock plate

Figure 20—Install the Lock Plate in the Grooves in the Countershaft and Reverse Idler Shaft.

Assembling the Gears on the Main (Spline) Shaft

The low and reverse sliding gear goes on first. Slide it onto the shaft with the shifting collar to the front. The gear should be free to slide on the splines for easy shifting.



1. Low and reverse sliding gear, shifting collar

Figure 21—Install the Low and Reverse Sliding Gear with the Shifting Collar to the Front.

Install the second speed gear with the tapered cone toward the front. (Fig. 21.)

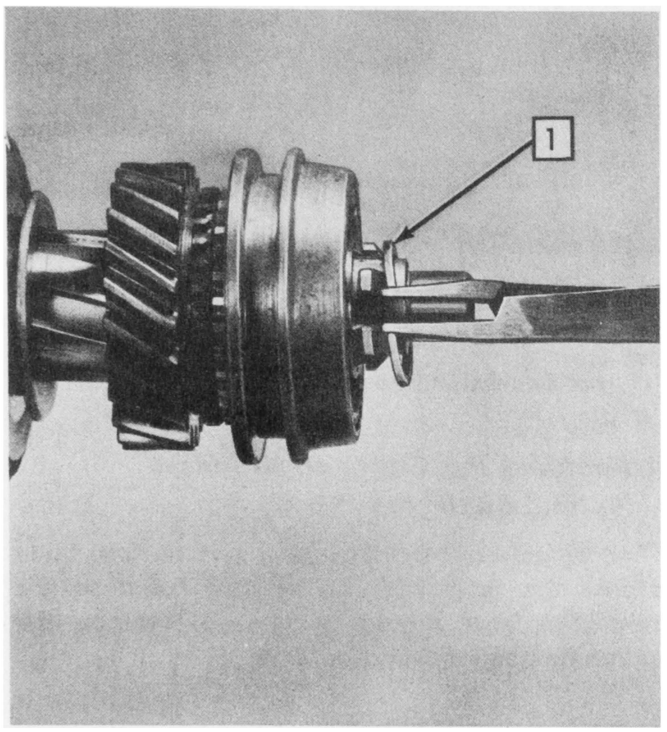
The Synchronizer Clutch Assembly

Install the synchro-clutch assembly, being sure that gear and sleeve are in their original positions.

(The front friction ring is installed together with the clutch shaft, to prevent its dropping out of place during installation of the main shaft assembly.)

Completing the Spline Shaft Assembly

The spline shaft front snap ring should now be installed by the use of the snap ring pliers.



1. Snap Ring

Figure 22—Complete the Main Shaft Assembly by Installing the Front Snap Ring.

When the synchro-clutch hub is pressed tight against the snap ring, there should be .003" to .010" clearance between the second speed gear and the shoulder on the main shaft. (Fig. 22.)

Installing the Transmission Main Shaft Assembly

Place a new gasket between the adapter and the transmission case.

Install the main shaft assembly through the rear of the case. As you do this, move it to the right side of the case so as to engage the shift forks.

Installing the Clutch Shaft Assembly

Insert the fourteen clutch shaft bearings in the clutch shaft. A coat of Lubriplate will hold them in position. Then install the front friction ring and the clutch shaft on the main shaft. (Fig. 23.)

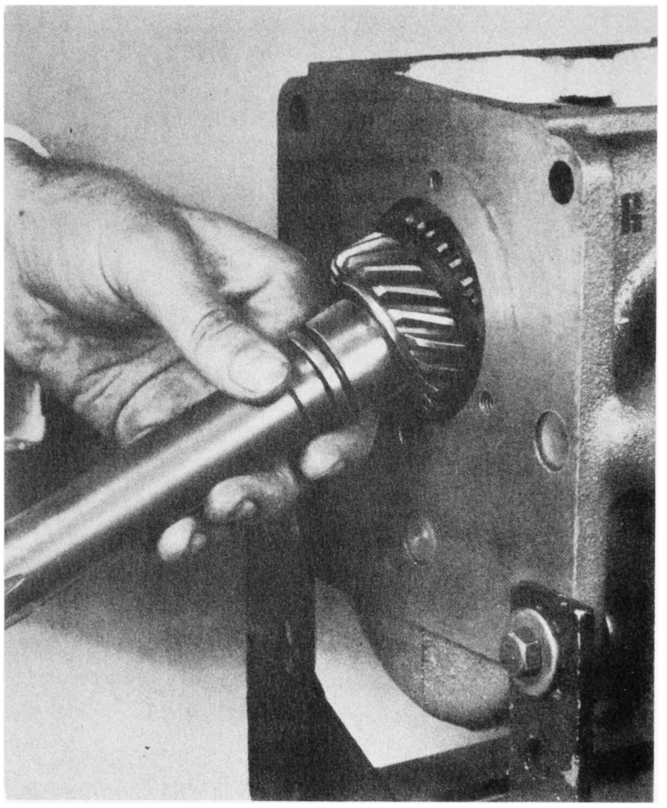


Figure 23—Installing the Clutch Shaft.

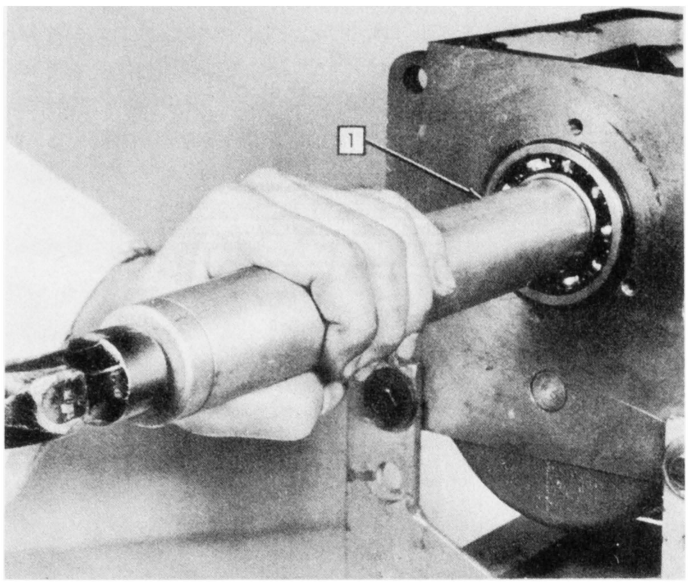
Install the oil slinger on the clutch shaft with the concave side toward the rear.

The front bearing can be driven in place using Tool J-2995, together with the thrust yoke (J-3042).

The clutch shaft small snap ring can be installed with snap ring pliers or Tool J-2995, Snap Ring Installing Set. Then install the large bearing snap ring. (Fig. 24.)

After installing a new oil seal in the bearing cap, install the bearing cap. Always use a new gasket between the bearing cap and the case. The thickness of the gasket used governs clutch shaft end play. The desired end play is .000".

The transmission now requires only a final check by shifting in all gears. Check the operation carefully, then install the case cover and gasket, placing the stamping marked "FRONT" to the front of the case. (Fig. 25.)



1. Tool J-2995

Figure 24—Installing the Clutch Shaft Bearing.

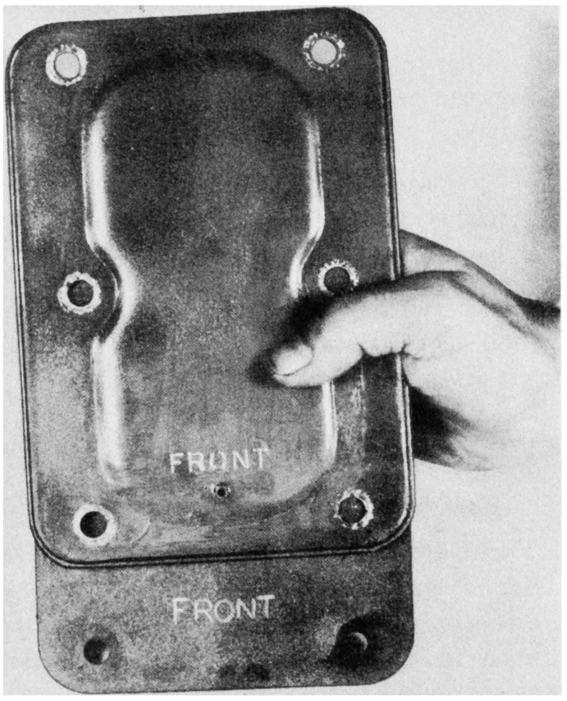


Figure 25—Note the Stamping Marked "Front" on Both Cover and Gasket.

Disassembly of the "Ambassador Six" Transmission Without Overdrive

Except for the removal of the main shaft, the disassembly of the standard transmission is the same as the transmission with overdrive.

To remove the transmission main shaft, it is necessary to disassemble the rear bearing cap completely.

Disassembly of the Rear Bearing Cap

Remove the gears from the main shaft as outlined in the forepart of this section.

Remove the large snap ring (item 8, Fig. 26) holding the rear transmission bearing in position, and press out the spline shaft from the rear to the front. The rear transmission bearing, speedometer gear and speedometer gear snap ring will remain on the shaft.

Remove the snap ring at the back of the speedometer drive gear (the speedometer gear is held in position with a Woodruff key) and remove the gear from the main shaft. After the Woodruff key is removed, the rear bearing can be pressed from the main shaft.

Remove the rear oil seal (item 5, Fig. 26). If the drive shaft bushing and felt oil ring require replacement, they can be driven out through the rear of the case.

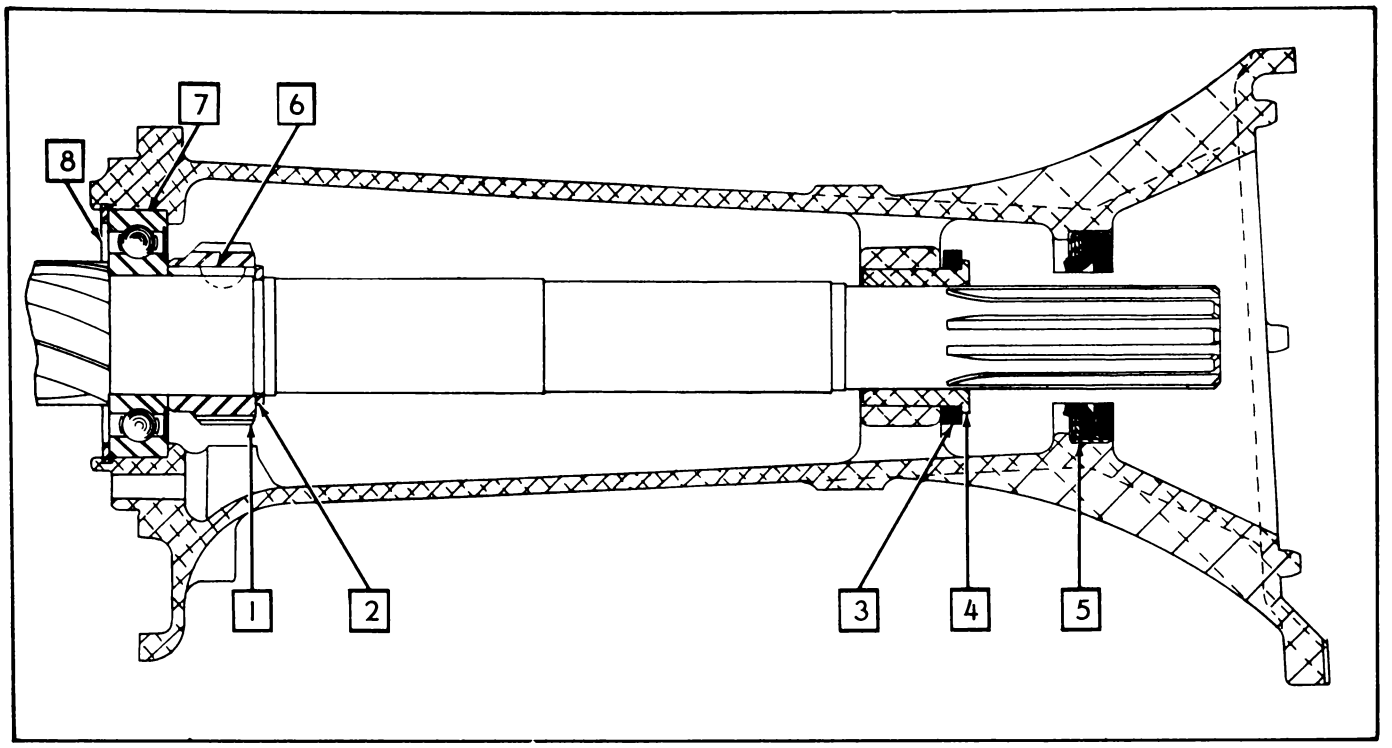
With the main shaft and bearing cap completely disassembled, cleaning and inspection of parts should be made as previously outlined in this section.

Assembling the Main Shaft and Rear Bearing Cap

Press the rear transmission bearing onto the spline shaft until it is tight against the shoulder of the shaft. Then place the Woodruff key in the spline shaft keyway, install the speedometer drive gear on the shaft tight against the rear bearing, and install the snap ring (item 2, Fig. 26). The snap ring must be thick enough to fill the groove in the shaft.

To install the drive shaft Oilite bushing, assemble the felt oil ring on it and press the bushing into the rear bearing cap. The shoulder on the drive shaft bushing must remain ¼" from the shoulder in the bearing cap to prevent compressing the felt oil ring (item 3, Fig. 26).

TRANSMISSION SECTION



1. Speedometer drive gear
2. Speedometer drive gear snap ring
3. Drive shaft Oilite bearing felt
4. Drive shaft Oilite bearing
5. Rear main bearing cap oil seal
6. Speedometer drive gear key
7. Drive shaft ball bearing
8. Drive shaft ball bearing lock ring

Figure 26—Sectional View of Rear Bearing Cap.

Install the main shaft assembly into the rear bearing cap and replace the rear bearing snap ring (item 8, Fig. 26). This snap ring must be thick enough to fill the groove in the main shaft to eliminate any possible end play.

Using Tool J-1556, install the rear bearing cap oil seal (item 5, Fig. 26). Assemble the gears onto the spline shaft as previously outlined.

Lubrication of the Transmission

Check the lubricant level of the transmission and the overdrive every 2000 miles. Transmission and overdrive units should be filled to the drain plug level on the right side of both units. Drain and clean twice a year, or every 10,000 miles, using only flushing oils. Do not use gasoline, kerosene, steam, etc.

For atmospheric temperatures above 32° F., use mineral gear lubricant SAE No. 90 in the transmission and overdrive.

Below 32° F., use SAE oil No. 80 in the transmission and overdrive.

Where difficulty in shifting is experienced in sub-zero temperatures, dilute the transmission and overdrive oil as required, using light engine oil.

CAUTION: *Do not use gear oil with extreme pressure lubricants or other compounded agents.*

NOTE: *Refer to Lubrication Chart for quantity of lubricant to use.*

THE 1949 "600" SERIES

Disassembling the Transmission

The transmissions used in the 1949 Nash "600" Series and the 1949 "Ambassador 6" Series are essentially similar. However, due to small differences in design, the procedures for disassembly and assembly are somewhat different.

The transmission without overdrive has a rear main bearing cap which serves as an extension, so that the same length torque tube can be used in cars with or without overdrive (Fig. 27).

The fundamental steps in overhaul procedure for the 1949 "600" Series are described below.

Removing the Case Cover

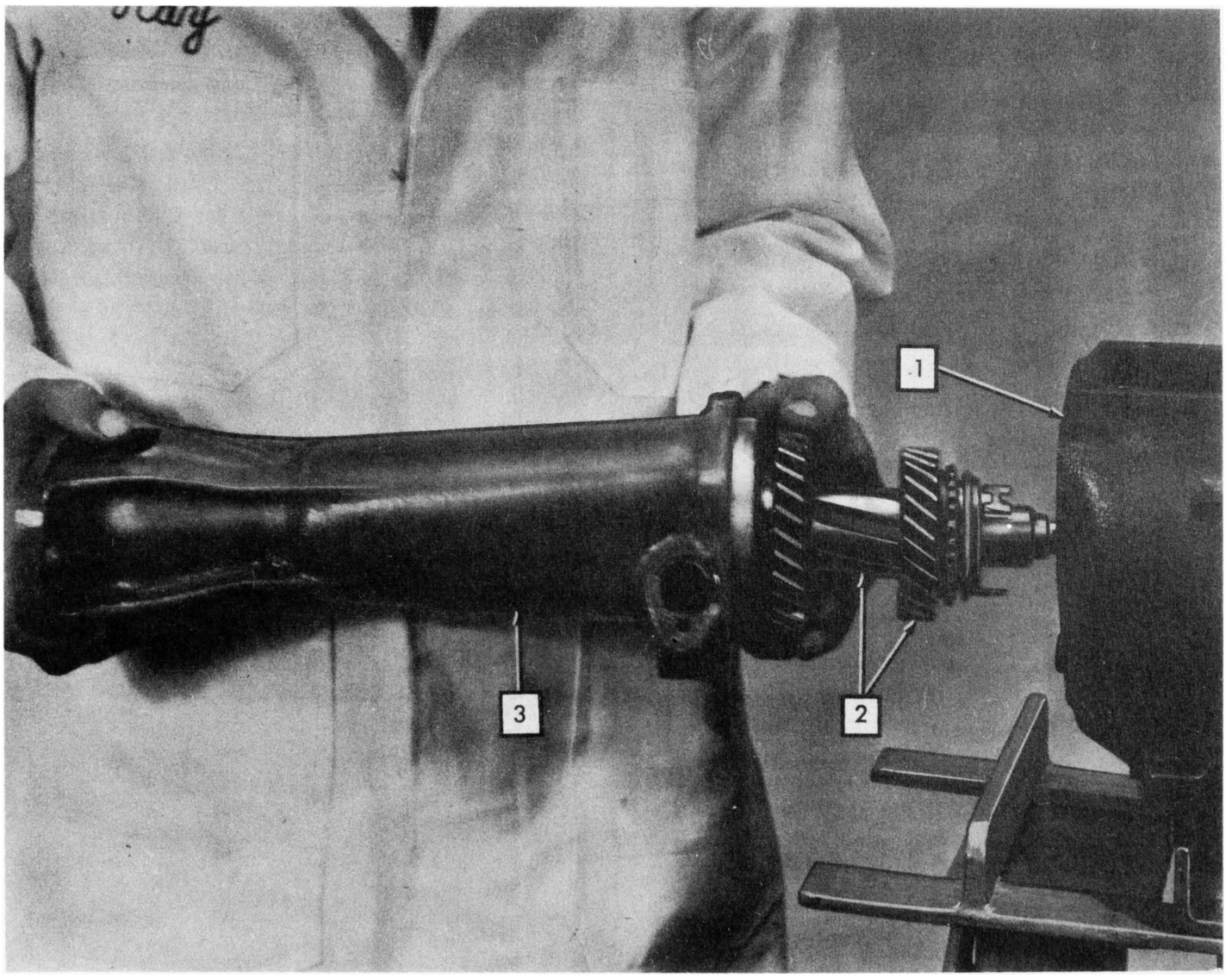
Remove the cap screws and take off the case cover. The transmission vent hole in the cover should be at the front. Inspect this hole to see that it is clear before reinstalling on the transmission. The case cover gasket has vent holes at the rear. This gasket has a stamping marked "FRONT" which should be placed toward the front when installing.

Removing the Spline Shaft Assembly

The shifting mechanism is not removed until the spline shaft assembly has been taken out. However, it is necessary to drive the low and reverse shifter shaft toward the outside of the case to provide clearance for the spline shaft gears. This is done by removing the tapered locking pin from the outside boss and driving the shifter shaft toward the outside of the case with a brass drift.

Remove the four cap screws that hold the rear main bearing cap to the transmission case. Move the complete spline shaft and bearing cap assembly toward the rear. When the main shaft is completely disengaged from the synchro-clutch, the low and reverse shifter fork should be removed. This will permit the rear main bearing cap and spline shaft and gear assembly to be withdrawn from the transmission case (Fig. 27).

NOTE: *On transmissions equipped with overdrive, the lower left stud must be removed in order to withdraw the transmission main shaft and overdrive unit as a complete assembly.*

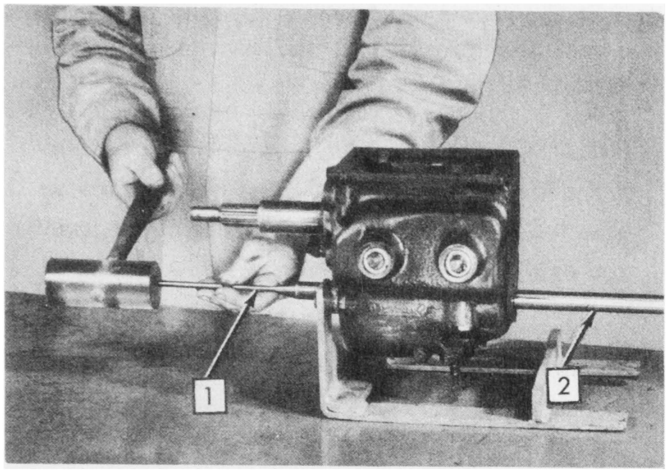


1. Transmission case
2. Spline shaft and gear assembly
3. Rear main bearing cap

Figure 27—Removing the Rear Main Bearing Cap and Spline Shaft Assembly from the Transmission Case.

The Countershaft and Gear

To remove the countershaft and gear after the rear bearing cap has been removed, drive out the countershaft lock with a small punch. Then, with the countershaft aligning tool (J-2632), tap the countershaft out from the front to the rear, as shown in Figure 28.



1. Countershaft aligning tool (J-2632)
2. Countershaft

Figure 28—Removing Countershaft from Transmission Case.

As the countershaft is removed, the countershaft gear will drop down onto the small diameter of the aligning tool.

Removing the Clutch Shaft Assembly

Remove the three cap screws that hold the front bearing cap to the transmission case. Then remove the bearing cap. (Note that the bottom of the cap is recessed to allow any lubricant that passes the bearing to drain back into the transmission case.)

Remove the clutch shaft and bearing from the front of the case. At the same time, remove the front friction ring through the top of the case.

Remove the snap ring that retains the bearing on the clutch shaft, and press the bearing from the shaft (Fig. 29).

NOTE: *The large lock ring on the outside of the bearing need not be removed unless the bearing is to be replaced. Only one ring thickness (.077") is used.*

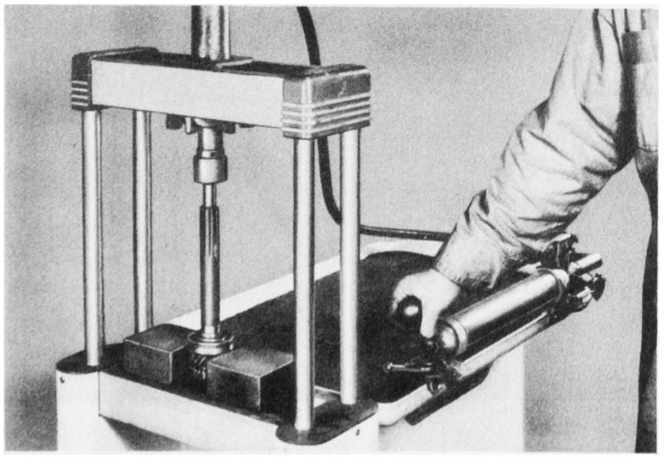
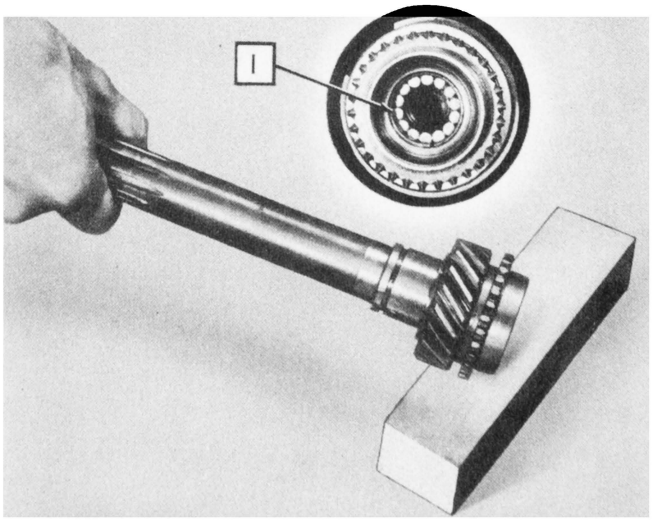


Figure 29—Pressing the Front Bearing from the Clutch Shaft.

Transmission Spline Shaft Pilot Bearing Rollers

Inside the rear end of the clutch shaft are thirteen roller bearings. These form the front bearing for the spline shaft. The rollers are held in place by a "keystone" effect in the same way that a stone arch supports itself. The snap ring keeps them in place during assembly.

Worn or loose rollers in this bearing will result in a noisy transmission. Inspect for pitted or scored rollers. Jar the end of the clutch shaft against a block of wood (Fig. 30). If the rollers fall out, they are loose, and should be replaced



1. Roller bearings

Figure 30—Bearing Rollers Inside the Clutch Shaft Hold Themselves in Place by a "Keystone" Effect. Jarring the Shaft will Show if these Rollers are Loose.

Removing the Gears from the Spline Shaft

Remove the clutch ring driver. As you remove it, note the position of this driver (Fig. 31). The short prongs of the driver are to the rear. These prongs lock the second speed gear thrust washer to the spline shaft.

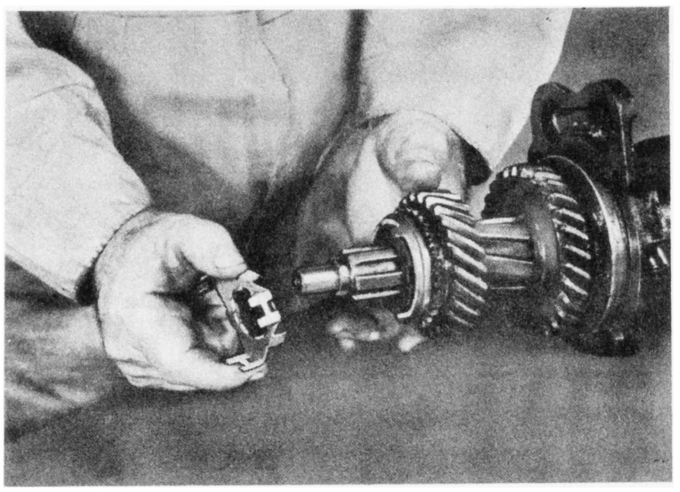


Figure 31—The Short Prongs of the Clutch Ring Driver are to the Rear.

Remove the second speed gear thrust washer. This is a splined washer which must be turned to line up with the grooves in the spline shaft before it can be removed.

This will permit removal of the second speed gear and the low and reverse sliding gear.

The Rear Bearing and Bearing Cap

Remove the snap ring from the front of the rear bearing cap, and drive the spline shaft toward the front with a brass drift (Fig. 32). The rear bearing and the speedometer gear will remain on the shaft.

Remove the spline shaft snap ring and the speedometer drive gear. (The speedometer drive gear is held in position with a Woodruff key.) Then press off the rear bearing after the key is removed.

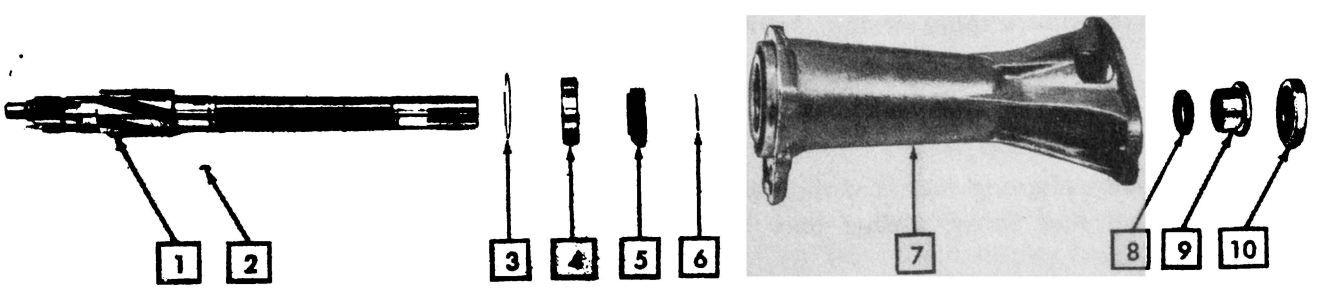
The transmission drive shaft bushing and felt ring (which acts as a lubricant wick for the bushing) and the rear bearing cap oil seal can be driven out to the rear of the bearing cap.

Removing the Reverse Idler Gear

Using a long punch, drive the reverse idler gear shaft out through the rear of the transmission case, being careful not to damage either the shaft or the case. Then lift out the gear.

Removing the Shifter Shafts and Forks

With the spline shaft out of the way, the high and low shifter forks can be easily removed from the shifter shaft quadrants. Remove the shift levers and the shifter shaft lock pins. Now, both shifter shafts can be removed through the top of the transmission case (Fig. 33).



1. Transmission spline shaft
2. Woodruff key
3. Rear ball bearing lock ring
4. Transmission rear bearing
5. Speedometer drive gear
6. Transmission spline shaft snap ring
7. Rear bearing cap
8. Transmission drive shaft bushing felt ring
9. Transmission drive shaft bushing
10. Rear bearing cap oil seal

Figure 32—Main Shaft and Rear Bearing Cap Assembly Sequence.

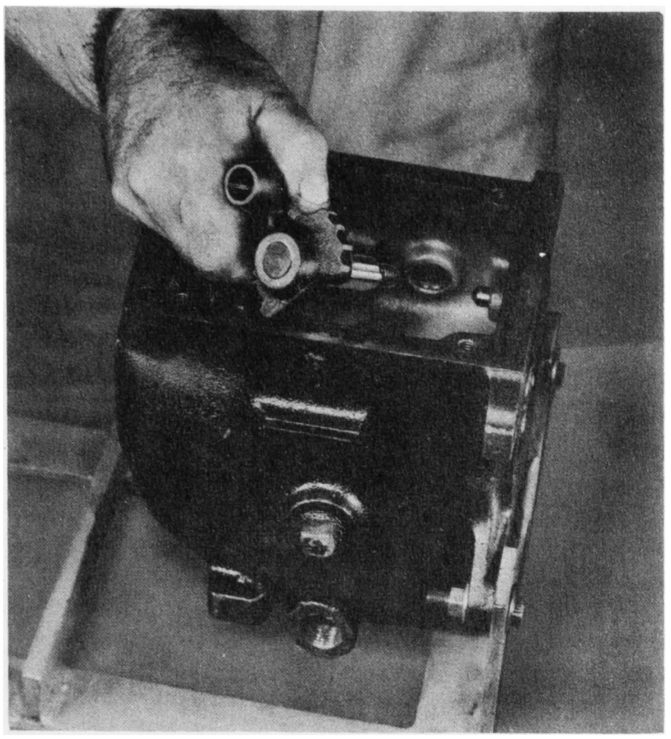


Figure 33—After the Lock Pins Have Been Removed, the Shifter Shafts Can Be Removed from the Inside of the Case.

Remove the two speed finder poppets from the transmission case. The high and second speed gear poppet is in front of the high speed shifter shaft quadrant. Removing the plug at the bottom of the case (beneath the low speed shifter shaft quadrant) will allow the low speed finder poppet and spring to be removed (Fig. 35).

Remove the interlock poppet from the boss between the two shifter shafts.

That completes the disassembly of the shifting mechanism.

Removing the Countershaft Gear

When the countershaft aligning tool is withdrawn, the countershaft gear and thrust washer may be lifted out.

Cleaning and Inspecting Parts

With the transmission completely disassembled, all parts should be carefully cleaned so that they can be thoroughly examined.

Gears

Wash all gears in a cleaning solution. Then go over them carefully, checking for worn, cracked or chipped teeth. Slide each gear onto a new shaft to check the fit. If any gear appears to be loose on a new shaft, it must be replaced.

NOTE: *Whenever any transmission gear requires replacement, the gear with which it meshes should also be replaced.*

Bearings

Bearings must be handled with great care. After they have been removed, do not spin them. Wrap them in a clean cloth or paper until they can be washed.

To wash a bearing, submerge it in a cleaning solution that is absolutely free of dirt and rotate it to flush away all oil and dirt. Dry the bearing with care.

Carefully examine each bearing for cracked races or worn or scored balls.

Spline Shaft

Fit the splined gears onto the shaft to be sure they slide on and off easily. They should fit smoothly without excessive play between the splines. If the fit is tight, look for burred edges on the splines.

Synchro-Clutch and Friction Rings

Make a careful inspection of the synchro-clutch and friction rings. Slide the rings on the cones of the second speed gear and the clutch shaft. If you find excessive wear on the taper, replace the rings.

Transmission Case

Examine the surfaces of the bearing recesses in the transmission case for wear or scoring which indicates that the bearing has been revolving in its housing. Examine the case for cracks or other defects.

Be certain that all parts of the case are thoroughly clean before and during reassembly.

Reassembling the 1949 "600" Series Transmission

When all parts have been cleaned and inspected, and any new parts to be used have been carefully tested, the transmission may be reassembled.

Reinstalling the Reverse Idler Gear

NOTE: *The low and reverse shifting shaft must be installed in the transmission case before the reverse idler gear is installed.*

INSTALLING THE COUNTERSHAFT GEAR

Install the reverse idler gear with the beveled side of the gear teeth toward the front. Then drive in the reverse idler gear shaft from the rear.

The notch for the shaft lock should be toward the rear and pointing in the direction of the countershaft. This avoids the necessity for turning the shaft after it has been installed.

Drive the shaft in until the notch for the shaft lock is flush with the case.

Installing the Countershaft Gear

Apply a heavy lubricant to the case side of the front thrust washer, and install the washer so that the lip is lined up with the slot in the transmission case.

Lower the countershaft gear into the case with the large gear toward the front, being careful to avoid dislodging the thrust washer.

After the gear is in position, insert the rear thrust washer through the hole in the rear of the case. Then insert the countershaft aligning tool (J-2632) with the large end of the tool toward the rear, allowing the countershaft gear to rest on the small diameter of the tool (Fig. 28).

Reinstalling the Shifter Shafts and Forks

Put the interlock poppet in the hole in the boss of the case, being sure that it is free to move back and forth. Then install the second and high speed finder poppet in the case.

The second and high shifter shaft (with the large quadrant) goes toward the front. Press the second and high speed finder into the case so that it will permit the shaft quadrants to contact the case, with the quadrants in a neutral position.

Install the low speed finder poppet and spring through the hole in the bottom of the case. Then replace the plug. (Fig. 34.)

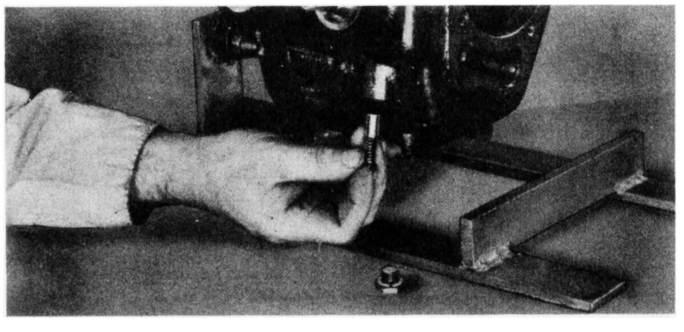


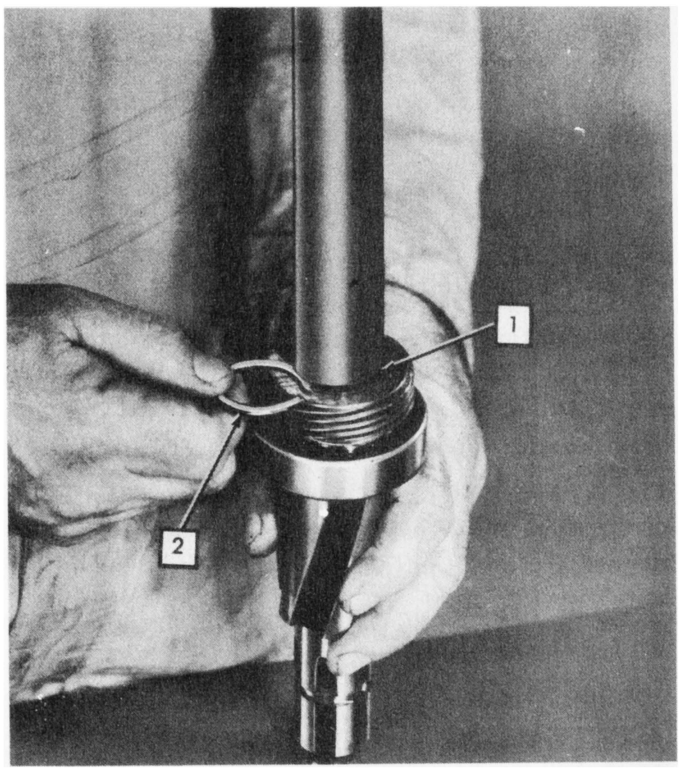
Figure 34—Install the Low Speed Finder Poppet from the Outside of the Case.

Install the large shifter fork in the high and second shifter shaft quadrant.

Reassembling the Gears on the Spline Shaft

Press the rear transmission bearing (closed end forward) on to the spline shaft until it is tight against the shoulder of the shaft. Then place the Woodruff key in the shaft keyway, and install the speedometer drive gear on the shaft, tight against the rear bearing. (Fig. 35.)

Install a snap ring just thick enough to fill the groove in the shaft. These rings come in three thicknesses—.087″, .090″ and .093″.

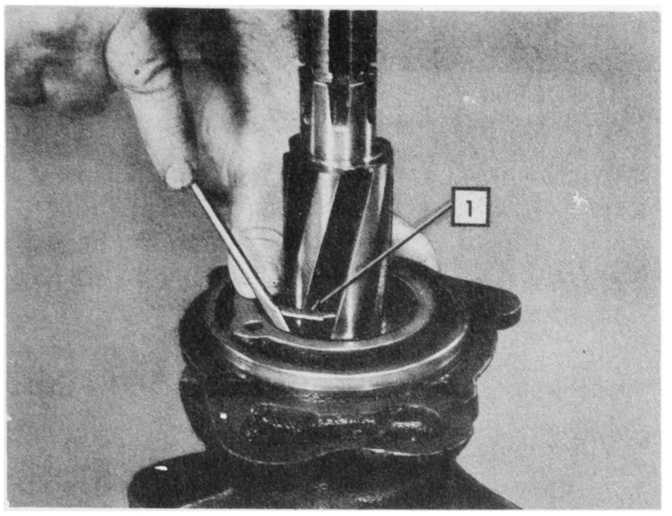


1. Ring groove
2. Snap ring

Figure 35—With the Rear Bearing and Speedometer Drive Gear in Place, Install a Snap Ring Just Thick Enough to Fill the Snap Ring Groove in the Shaft.

With the rear bearing and speedometer drive gear locked in place, install the spline shaft through the front end of the rear bearing cap (Fig. 32). Be sure the bearing is firmly seated in the cap, and then install the transmission rear bearing lock ring. This ring should fill the lock ring groove so that there is no end play in the spline shaft and bearing assembly (Fig. 36).

These rings come in four thicknesses — .062″, .065″, .068″ and .071″.



1. Lock ring

Figure 36—The Correct Lock Ring Thickness Will Eliminate All End Play in the Spline Shaft and Bearing Assembly.

The Low and Reverse Sliding Gear

Install the low and reverse sliding gear on the spline shaft with the shifting collar to the rear. The gear must slide freely on the splines.

The Second Speed Gear

Place the second speed gear on the shaft with the cone toward the front. Test this gear to be sure it revolves freely on the shaft.

The second speed gear is locked on the shaft by the second speed gear thrust washer (Fig. 37). Install this washer on the spline shaft, against the second speed gear and in a recess on the shaft. Then turn it one spline. This locks it in place.

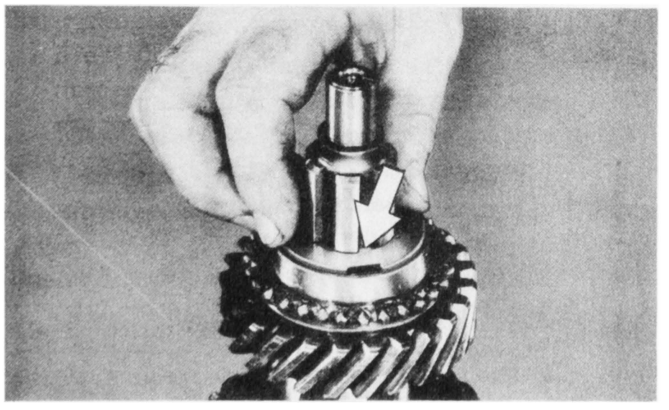


Figure 37—When You Line Up the Splines on the Thrust Washer with the Splines on the Shaft, the Second Speed Gear is Locked on the Shaft.

Second Speed Gear End Play

Insert a feeler gauge between the rear face of the second speed gear and the shoulder of the spline shaft. This clearance should be between .002″ and .010″. (Fig. 38.)

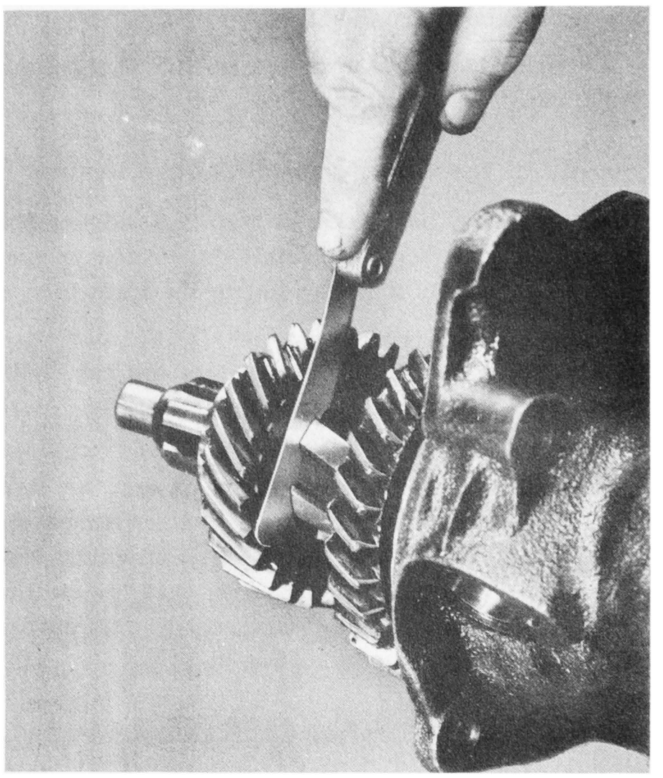


Figure 38—To Measure the Second Speed Gear End Play, Use a Feeler Gauge Between the Gear and the Shoulder on the Spline Shaft.

The Rear Friction Ring

With the second speed gear in place, install the rear synchro-clutch friction ring on the cone of the gear so that the prongs on the ring are toward the front.

The Clutch Ring Driver

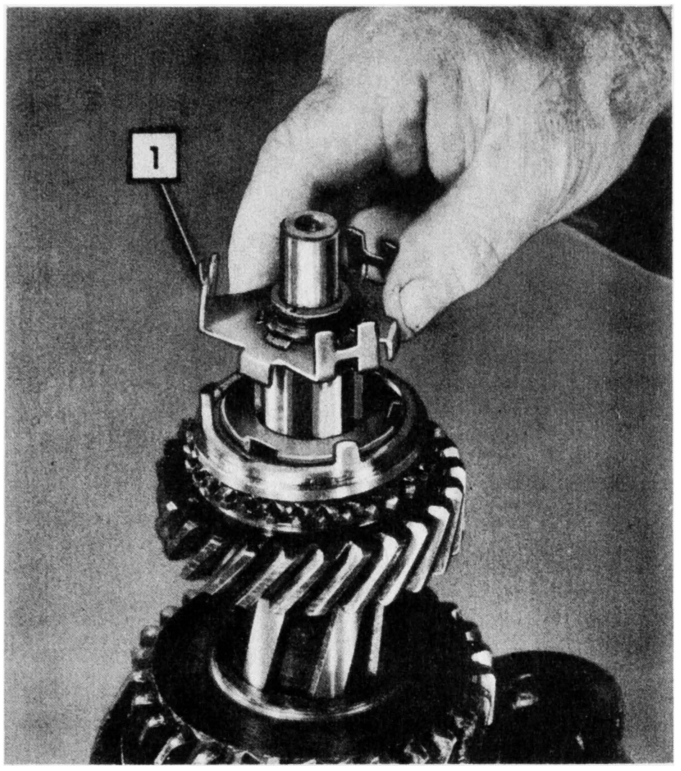
The clutch ring driver is a splined stamping that must be installed with the short prongs pointing toward the second speed gear. As you install the driver, line up these prongs with the recesses in the second speed gear thrust washer (Fig. 39). This locks the washer to the shaft. Line up the prongs on the clutch friction ring with the slots in the driver.

The Synchro-Clutch

The synchro-clutch is of spring and ball type construction. It is made up of the hub, shifting collar, six balls and springs. The unit is serviced as an

assembly. However if the collar should be removed from the hub, it can be reassembled in the following manner:

(Hub and collar should be marked before disassembly). First, assemble the springs and balls in the hub. Then use a piston ring compressor to depress the balls against the spring in order to install the shift collar. The chamfered side of the collar goes toward the long end of the hub.



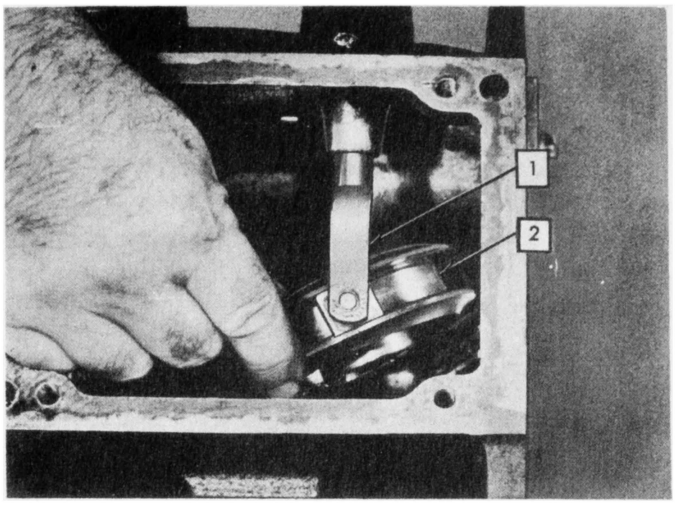
1. Driver

Figure 39—The Clutch Ring Driver Should Be Installed with the Short Prongs Toward the Second Speed Gear and Lined Up with the Slots in the Thrust Washer.

Reinstalling the Spline Shaft Assembly

With the high gear shifter fork in position, install the synchro-clutch assembly. To do this, use heavy grease on the two shoes and place them on the high gear shifter fork shoe pins. Place the synchro-clutch in the fork and turn it so that the long end of the hub is toward the front of the case (Fig. 40). Hold it in this position while inserting the spline shaft assembly.

Now install the small shifter fork in the low and reverse shifter shaft quadrant, making sure that the flat side of the fork is to the rear.

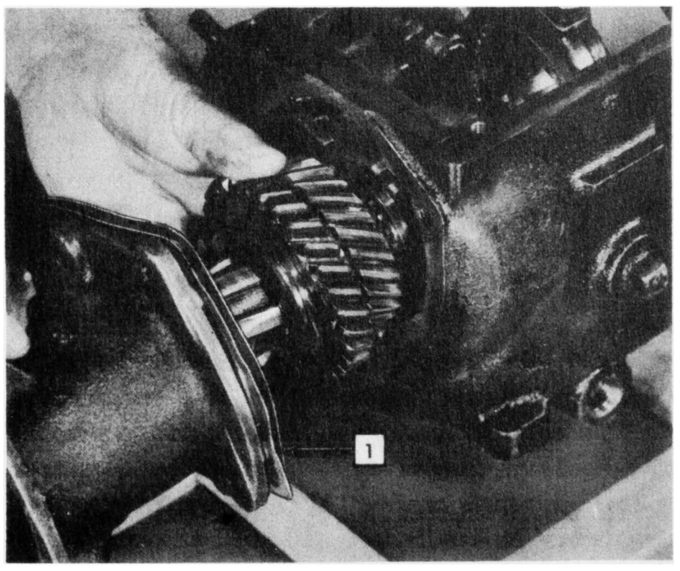


1. Fork
2. Clutch

Figure 40—To Install the Synchro-Clutch, Place it in the Fork and Turn it so that the Long End of the Hub is Toward the Front. Then Insert the Spline Shaft.

The Rear Bearing Cap Shims

Place a .010″ shim, with a gasket on each side of the shim, between the rear bearing cap and the transmission case (Fig. 41). This is the shim that determines the clearance between the front friction ring and the main drive gear. This clearance will be inspected and adjusted after the assembly is completed.



1. Shim and gaskets

Figure 41—The Shim that Determines Friction Ring Clearance Goes Between the Rear Bearing Cap and the Case. Gaskets are Placed on Each Side of the Shim.

As the spline shaft is inserted in the case, move the low and reverse sliding gear forward on the shaft. Work the spline shaft into the case and into the synchro-clutch assembly.

As you work the spline shaft forward in the case, rotate the synchro-clutch to line it up with the splines on the shaft (Fig. 42). At the same time, be sure that the three recesses in the clutch hub line up with the three prongs on the clutch ring driver.

Line up the low and reverse shifting fork with the shifting collar on the low gear.

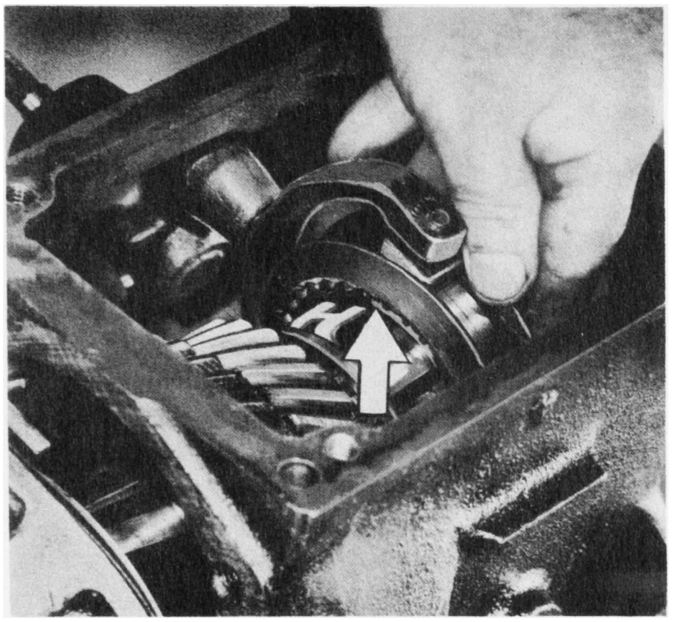


Figure 42—As You Work the Spline Shaft into the Case, Line up the Three Recesses in the Synchro-Clutch Hub with the Prongs on the Clutch Ring Driver.

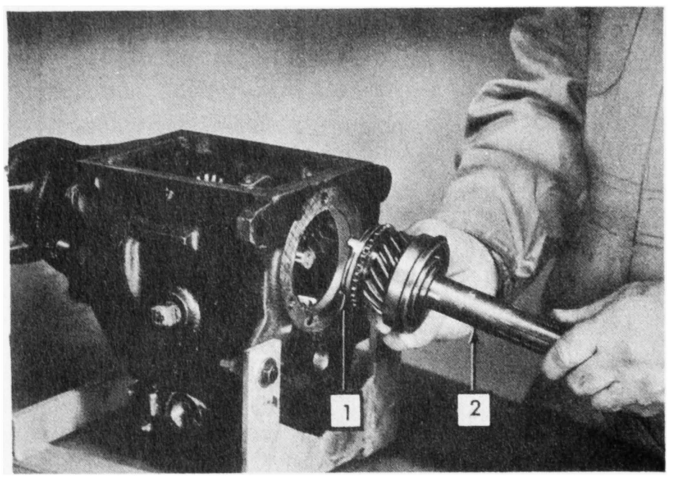
Reinstalling the Clutch Shaft Assembly
The Transmission Front Bearing

If the lock ring on the outside of the front ball bearing has been removed, or if a new bearing is being used, be sure to place a .077″ thickness lock ring in the bearing groove. Then press the bearing on to the clutch shaft (snap ring groove to the front), tight against the shoulder. Install a snap ring just thick enough to fill the groove in the shaft. These snap rings come in three thicknesses—.092″, .095″ and .098″.

The Front Friction Ring

Before installing the clutch shaft assembly, install the front friction ring on the cone of the clutch shaft.

Then install the clutch shaft assembly in the case, lining up the prongs of the friction ring with the slots in the clutch ring driver (Fig. 43).



1. Friction ring
2. Clutch shaft

Figure 43—As the Friction Ring is Placed on the Cone of the Clutch Shaft, Install the Clutch Shaft Assembly.

The Front Bearing Cap

With the clutch shaft in place, use a new gasket and install the bearing cap, lining up the oil return recess with the hole in the case. Then replace the cap screws.

CAUTION: *When tightening up the cap screws, note whether the cap presses against the bearing or against the transmission case first. If it presses against the bearing, insert additional gaskets between the cap and the case.*

Inspecting Clutch and Spline Shaft Clearances

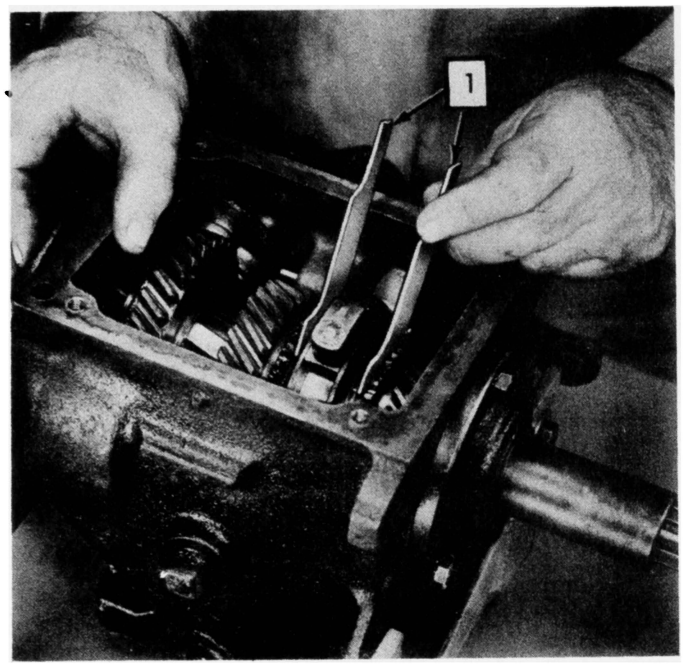
Clutch Shaft End Play

End play in the clutch shaft is controlled by three factors—the depth of the counterbore in the front bearing cap, the thickness of the front bearing lock ring, and the thickness of the gasket used between the bearing cap and the transmission case. This end play should not be more than .005″, preferably .000″.

Friction Ring Clearance

With the clutch and spline shafts assembled in the case, hold the rear bearing cap tight against the case. Measure the clearance of the friction rings

with the friction ring clearance gauges (J-1542), as shown in Figure 44. These clearances should be .105". If it is less, add shims between the rear bearing cap and the case. If it is excessive, remove gaskets or shims. Gaskets must be used on both sides of the shim.



1. Tools J-1542

Figure 44—Gauging Front Friction Ring Clearance. It Should Be .105".

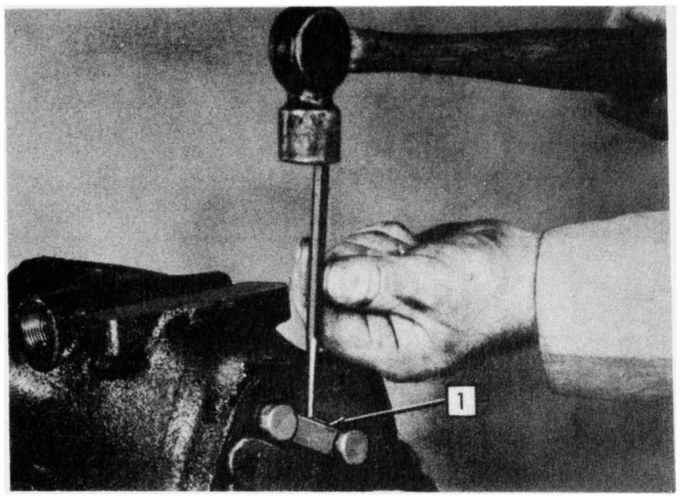
Reinstalling the Countershaft

When spline and clutch shaft clearance and adjustments have been made, assembly of the transmission may be completed.

The countershaft gear is in the bottom of the case resting on the small diameter of the countershaft aligning tool (J-2632). Turn the transmission upside down so that the gear will drop into position and mesh with the clutch shaft gear, the second speed gear and the reverse idler gear.

Be sure the thrust washers are seated in the notches in the case. Then with a fiber hammer, tap the counter-shaft into position from the rear. Hold the aligning tool in constant pressure against the shaft while driving it in. Be sure that the locking groove in the shaft will line up with the locking groove in the reverse idler gear shaft.

Tap the countershaft in until the lock plate can be installed. Insert the lock plate between the two shafts and tap it into position (Fig. 45). If the plate tends to slip out, tap the ends of the two shafts just enough to bind the plate against the case.



1. Lock Plate

Figure 45—With the Grooves in the Reverse Idler Shaft and the Countershaft Lined up, Tap the Lock Plate into Position.

Completing the Reassembly of the Shifting Mechanism

Position the high and second speed shifter shaft toward the inside of the transmission case until the lock pin can be inserted. Then drive the lock pin in from the top.

Line up the low and reverse shifter fork with the low and reverse sliding gear. Position the shifter shaft to receive the lock pin. Drive the lock pin in from the top.

Install the shifter shaft oil seals, using Tool J-2633. Then put on the shifting levers, the longer one at the front. Both levers should be installed so that they point down and forward when the gears are in neutral.

Finally, install the lockwashers and shifter shaft nuts. Tighten them securely.

Alignment of the Shifter Forks

With the transmission fully engaged in second gear, measure the clearance between the rear face of the synchro-clutch shift collar and the front face of the second speed gear (Fig. 46). This clearance should not be less than .028". If it is less, either the shifter fork or the quadrant has been distorted and should be replaced.

Before replacing the cover plate, shift the gears in all positions, turning the transmission clutch shaft to see if the gears mesh correctly and turn freely. Lubricate the bearings and thrust surfaces with engine oil.

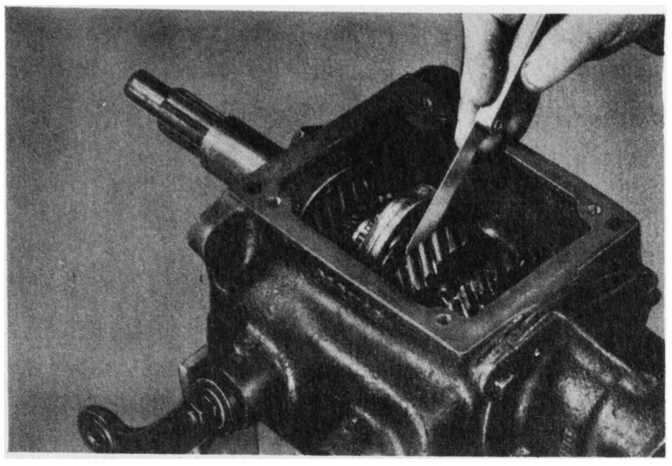


Figure 46—With the Transmission in Second Gear, the Clearance Between the Synchro-Clutch Shift Collar and the Second Speed Gear Should Be Not Less Than .028".

Place the cover gasket on the case with the vent hole toward the rear. Then install the transmission cover, making sure that the vent hole in the cover is clear, and to the front.

Bolt the cover down, and the assembly is complete.

Lubrication of the Transmission

Check the lubricant level of the transmission and the overdrive every 2000 miles. Transmission and overdrive units should be filled to the drain plug level on the right side of both units. Drain and clean twice a year, or every 10,000 miles, using only flushing oils. Do not use gasoline, kerosene, steam, etc.

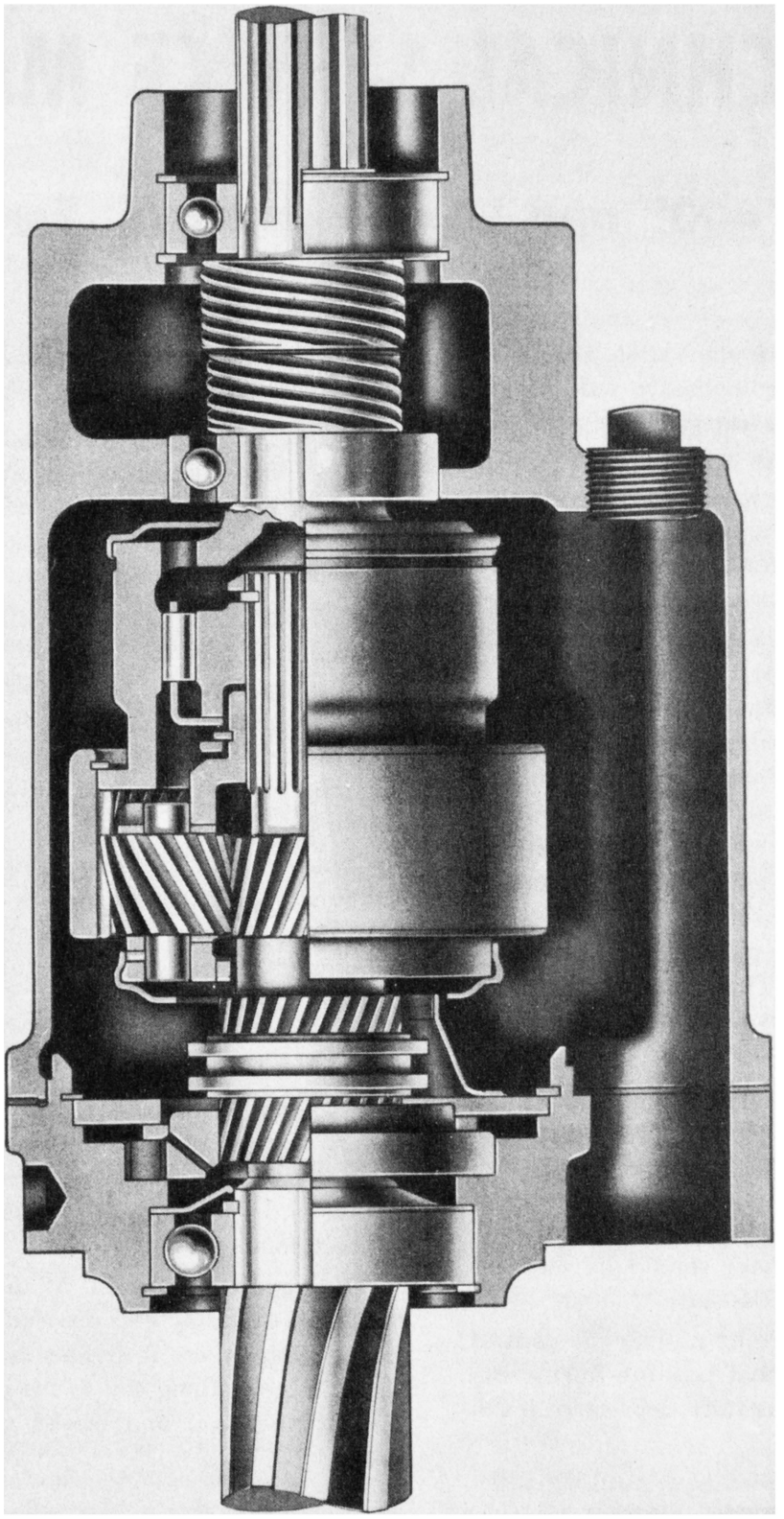
For atmospheric temperatures above 32° F., use mineral gear lubricant SAE No. 90 in the transmission and overdrive.

Below 32° F., use SAE oil No. 80 in the transmission and overdrive.

Where difficulty in shifting is experienced in sub-zero temperature, dilute the transmission and overdrive oil as required, using light engine oil.

CAUTION: *Do not use gear oil with extreme pressure lubricants or other compounded agents.*

NOTE: *Refer to Lubrication Chart for quantity of lubricant to use.*



OVERDRIVE SECTION

NASH TECHNICAL SERVICE MANUAL

1949 "600" and "Ambassador 6" Series

OPERATION

The overdrive unit, when in operation above the governor cut-in speed, automatically reduces the engine to rear axle ratio by approximately 30%.

When overdrive operation is desired, the control button is pushed to the forward position. The car speed is then increased to a point higher than the cut-in speed which is determined by the point setting of the overdrive governor.

As the governor points close, at approximately 29 miles per hour, the solenoid is energized. This allows the locking pawl to engage the sun gear hub and balk ring assembly, when the accelerator is momentarily released. When the accelerator is again depressed, the overdrive is in operation. When this takes place free wheeling becomes inoperative as free wheeling is possible only below the cut-in speed determined by the overdrive governor.

To lock out the overdrive the control button must be pulled all the way out. This can be done either when the car is in motion or when it is parked.

Locking out the overdrive while the car is in motion must be done while the car is in free wheeling. The accelerator is depressed so that the engine is driving the car, overcoming free wheeling, and the control button is pulled out without depressing the clutch. While still applying pressure to the control button, the accelerator should be momentarily released to complete the shift.

An alternate method permits pulling the control button back into conventional position during the time the accelerator pedal is fully depressed in the overtake position.

THE OVERDRIVE CONTROL UNITS

In order to service this control system, it is very important to understand just how it works. The following paragraphs explain the entire overdrive control system.

The Electrical Circuits

The electrical system (Figs. 1, 2, 3 and 4) consists of the three following circuits:

Governor circuit—light line.
Solenoid circuit—heavy line.
Kickdown circuit—dotted line.

Governor Circuit

The governor circuit starts from a terminal on the ignition switch to the terminal "IGN" on the overdrive relay. Then, passing through the relay coil which magnetically controls the contact points "B" of the solenoid circuit, it continues from the "TH" terminal of the relay to the kickdown switch relay terminal "E".

Crossing the kickdown switch to the overdrive terminal "K", it passes thence to "F" and through the closed contacts of the overdrive shift switch to terminal "G" and to the governor "H" and its open contact points "A".

Solenoid Circuit

The solenoid circuit starts at the hot terminal of the 30 ampere circuit breaker. It then proceeds to the battery terminal of the overdrive relay where it passes through a 20 ampere fuse, then to the open contact points "B".

The circuit is resumed at the solenoid terminal "SOL" of the relay and proceeds to terminal "4" of the solenoid where it divides into two coils, passing through the holding coil to the ground and through the solenoid coil and closed contacts "C" to the ground.

Kickdown Circuit

The kickdown circuit starts at the ignition coil positive terminal and proceeds to the coil terminal "L" on the kickdown switch. From the open contacts of the kickdown switch, it continues from terminal

"J" to terminal "6" on the solenoid. Open contacts "D" are in the path between terminal "6" and the solenoid ground. (Fig. 1.)

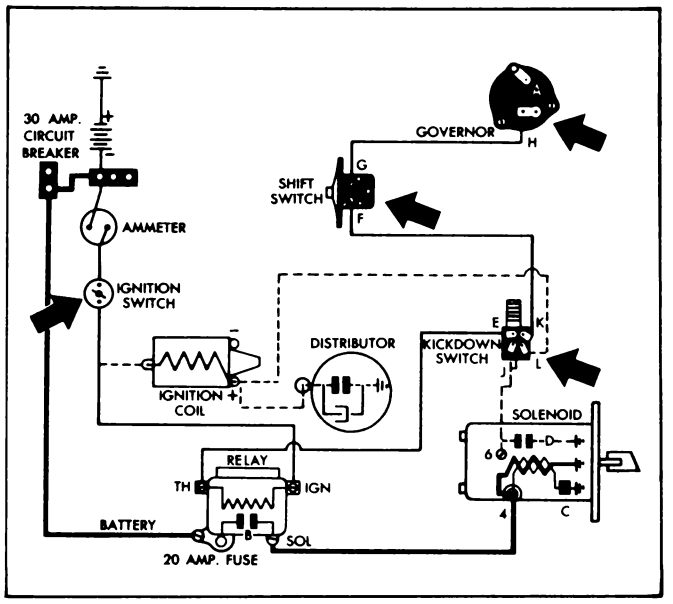


Figure 1—The Governor Circuit (light line), the Solenoid Circuit (heavy line), and the Kickdown Circuit (dotted line), all Operate to Energize or De-energize the Solenoid.

The Circuits in Action

When the car attains a speed of 29 miles per hour, the centrifugal action of the weights in the governor closes it contacts "A", thus completing the circuit from the ignition switch to the ground.

The relay coil, being energized magnetically, closes the relay contacts "B" of the solenoid circuit.

The solenoid circuit, being completed, immediately energizes the actuating coil of the solenoid, moving the pawl into the balk ring and the lock plate.

As soon as the solenoid plunger has been permitted to enter the lock plate, the contacts "C" in the solenoid actuating circuit are opened, permitting a decreased flow of current through the holding coil to retain the plunger in position during the time when the overdrive is in operation.

The inward movement of the solenoid plunger, in addition to operating the contact "C" in the solenoid actuating circuit, also closes contact "D" in the kickdown circuit through the release of the spring lever on the outer end of the solenoid. The circuits are now in normal condition for continuing the overdrive operation.

In order to understand the overdrive control system, the first thing to remember is that at any time there is an open switch in a circuit, that entire circuit is open and inactive. When all four switches in the governor circuit are closed, the relay coil is energized, closing the points "B". This completes the solenoid circuit and energizes the solenoid, which, through the locking pawl, locks the sun gear and places the overdrive in cruising gear. Also, any time any one of the four governor circuit switches is open, the relay coil is de-energized, the points open, and the solenoid circuit is broken.

At Speeds Below 29 Miles Per Hour

With the cruising gear control forward at speeds below 29 miles per hour, every switch in the governor circuit is closed except the governor switch. But this one open switch is enough to keep the entire governor circuit and the solenoid circuit open, and the solenoid remains de-energized. (Fig. 2.)

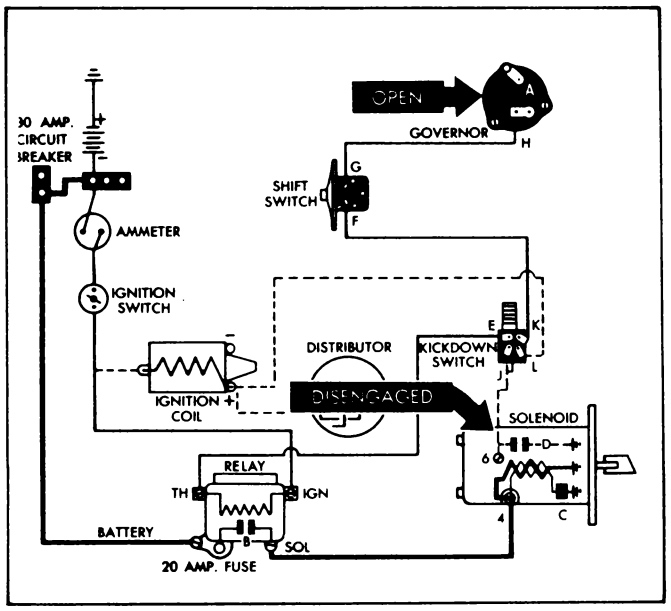


Figure 2—At Less than 29 Miles per Hour the Governor Switch Keeps the Circuit Open and the Solenoid Pawl Remains Disengaged.

At Speeds Above 29 Miles Per Hour

As the speed of the car passes 29 miles per hour, the governor points automatically close. This completes the governor circuit, energizes the relay and closes the relay points "B", thus energizing the solenoid.

Then, with a momentary release of the accelerator pedal, engine torque is released just long enough for the solenoid pawl to move off the step of the balk ring and engage the notch of the lock plate, locking the sun gear. This places the car in cruising gear. (Fig. 3.)

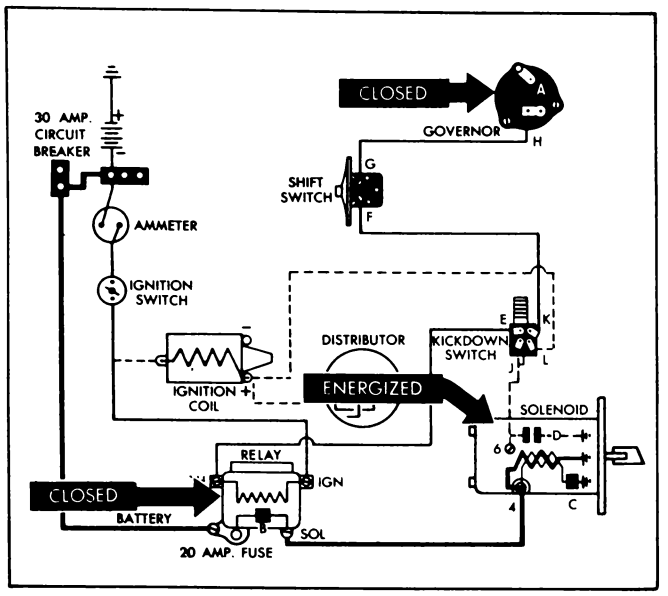


Figure 3—Above 29 Miles per Hour the Governor Points Automatically Close, thus Closing the Governor Circuit and the Relay, which Energizes the Solenoid.

The Kickdown Switch (and Overtake Position)

With the car in cruising gear at speeds above 29 miles per hour, depressing the foot accelerator all the way to the floor places the overdrive in overtake position. (Fig. 4.)

This is due to the fact that the accelerator pedal is connected to the kickdown switch. Depressing the accelerator opens the points "E" and "K" in the kickdown switch, and closes the points "J" and "L". This at the same time breaks the governor circuit and completes the kickdown circuit. The break in the governor circuit de-energizes the solenoid. The closing of the kickdown circuit momentarily "shorts out" the distributor (for approximately two crankshaft revolutions) releasing engine torque just long enough for the solenoid pawl to disengage. The instant the solenoid disengages, the solenoid points "D" automatically open, restoring the distributor circuit. The car then remains in direct gear as long as the engine is kept under a pulling load.

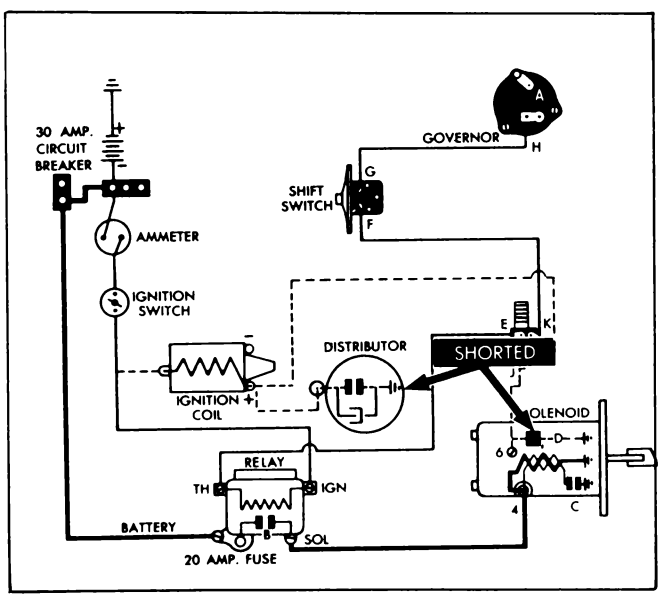


Figure 4—With the Kickdown Switch Open, the Governor Circuit is Broken and the Solenoid De-energized. Also, the Distributor is Shorted Out to Release Engine Torque.

The Overdrive Shift Switch

The cruising gear control button on the instrument panel is connected to the shift lever and rod that operates the shift switch. When this button is all the way forward, the shift switch is closed and the overdrive will operate as detailed in the foregoing paragraphs. Pulling this button to the rear or conventional position, however, moves the shift rod in the overdrive so as to open the shift switch (breaking the governor circuit). This also shifts the sun gear into the locked-out position. The overdrive in this position is in direct gear at all times.

Placing the gear shift lever in the reverse position does the same thing as pulling out the cruising gear control button. When the transmission is placed in reverse, the cam on the shifter shaft quadrant moves the shifter rod to the rear, shifting the sun gear, locking the overdrive in direct gear, and opening the shift switch.

DIAGNOSING OVERDRIVE TROUBLES

Since overdrive troubles may originate not only in the mechanical operation of the unit but also in the electrical circuit which controls that unit, the service man should always check the control system before disassembling the overdrive.

If the trouble is not found after a thorough inspection of the control system, then the transmission and overdrive should be removed for examination.

Unsatisfactory Overdrive Operation

Look for:

1. Burnt relay fuse in solenoid circuit.
2. Loose terminals on any of connecting wires.
3. Incorrect terminal locations of connecting wires.

4. Circuits grounded by water, dirt or deformation.
5. Defective solenoid points. (Replace solenoid).
6. Dirty or sticking relay contacts.
7. Insufficient travel or unsatisfactory contacts in the kickdown switch. (Adjust or replace.)
8. Stuck open or dirty contacts in the overdrive shift switch (Replace).
9. Excessive end play in the governor shaft. (Adjust.)
10. Improper adjustment of governor control springs. (Replace governor.)
11. Burnt contact points. (Replace governor.)
12. Damage to cap and contacts. (Replace governor.)
13. Absence of rubber cover to exclude water and dirt. (Install cover.)
14. Insufficient travel of shift rod. (Adjust control cable to operating lever.)

Checking Inoperative Overdrive

Mechanical Checks:

1. Determine if the overdrive control button is pushed forward to the limit of travel.
2. Check to insure that the overdrive cable is adjusted to move the overdrive lever firmly against the stop on the overdrive housing in the engaged position.

Electrical Checks:

With the ignition switch on and the overdrive cable pushed forward, use a test wire or a 6-volt test light. All directions given are as viewed from the driver's seat.

1. Check the 20 ampere fuse in the overdrive relay for live circuit and clean contacts.
2. Connect directly from the hot terminal on the circuit breaker to the terminal "SOL" on the overdrive relay mounted on the front of the cowl. This will supply current to the solenoid, which should operate. If it does not, check for a possible defective connecting wire or connection at the solenoid terminal before condemning the solenoid.
3. Ground the relay terminal "TH". If the relay is functioning properly, the points of the relay will close and the solenoid will operate.
4. Ground the terminal "E" (see diagram) on the kickdown switch. If all circuits are correct to this point, the solenoid should operate.
5. With the kickdown switch terminal "K" grounded (see diagram), pull down the kickdown switch cable. This breaks the circuit and the solenoid should release.

If the solenoid operates in the above tests, all circuits up to this point are correct and further investigation must be conducted underneath the car.

6. With the test wire, ground terminal "F" (see diagram) on the overdrive shift switch. The solenoid should operate as the connection is made. Then ground terminal "G" on the overdrive shift switch, and again the solenoid should operate. If it does not, the switch is at fault, the control cable is misadjusted, or the shift rod is stuck in the case. The latter cause is indicated by lack of spring load on the shift lever.
7. Ground terminal "H" on the governor. The solenoid should operate.
8. Governor Operation Inspection:
   Suspend the rear axle and operate the engine at low speed in high gear. Apply a test lamp across the governor contacts from the live terminal "H" to the ground strap. The test lamp should light. Now increase engine speed. The governor cut-in speed will be indicated when the light goes out.

Summary

By following the above procedure in the proper sequence, the defective portion of the electrical circuit can be readily located. If all the preceding items are functioning correctly, the trouble may lie in the solenoid itself, such as burned points, or the connecting wires may be grounded to the case.

The kickdown switch should be carefully inspected to see that none of its four terminals are touching each other. If the terminals "E" and "J" make contact, the grounded circuit will supply current to the relay, operating the solenoid without the possibility of disengagement. This is usually the case when the car will not free-wheel or properly shift into reverse.

A rubber boot has been provided to exclude water and dirt from the governor. Moisture or an accumulation of foreign matter may ground the live terminal on the governor and cause the solenoid to operate as soon as the ignition switch is turned on.

If the mechanical and operating checks do not reveal the difficulty, internal trouble should be sus-

pected and the transmission and overdrive removed for examination.

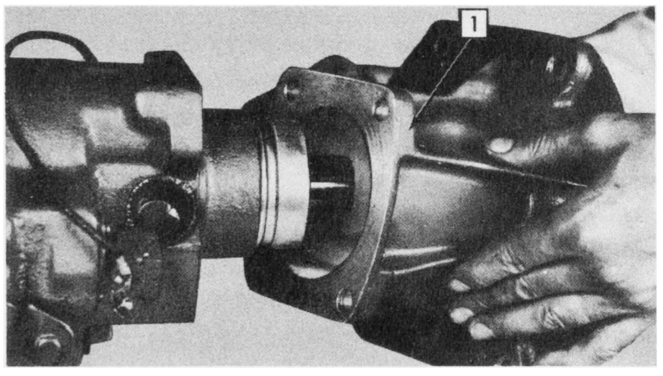
DISASSEMBLING THE OVERDRIVE

NOTE: *Due to the similarity of the "600" and "Ambassador 6" Series overdrive units in appearance and operation, the illustrations shown refer to the "Ambassador 6" Series only.*

The transmission and overdrive are removed from the car as a unit. However, it is not necessary to disassemble the transmission in order to overhaul the overdrive unless the transmission main shaft, the bearing in the adapter or other transmission parts require replacement.

Removing the Torque Tube Adapter and Electrical Controls

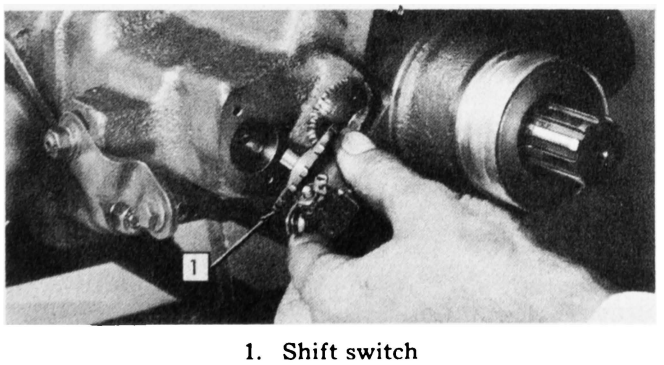
With the transmission and overdrive assembly drained of its lubricant and set up in a transmission stand, remove the torque tube adapter. (Fig. 5.)



1. Torque tube adapter

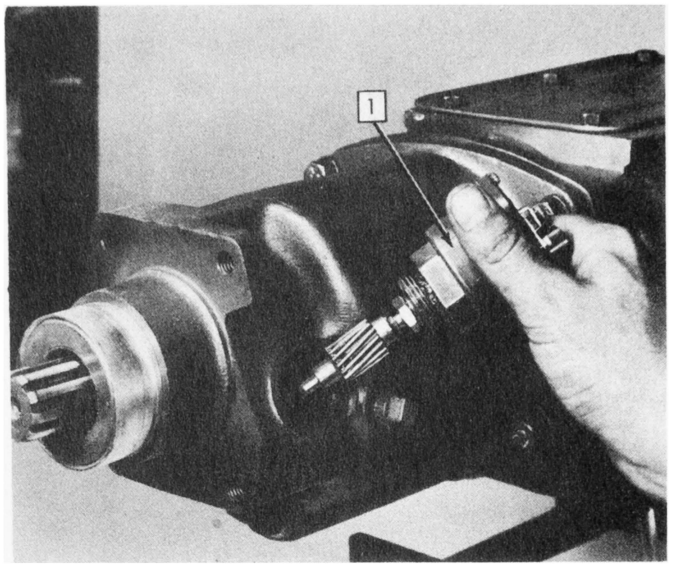
Figure 5—Remove the Torque Tube Adapter.

Then remove the shift switch from the rear of the overdrive and the governor and drive unit assembly from the case. (Figs. 6 and 7.)



1. Shift switch

Figure 6—Remove the Shift Switch.



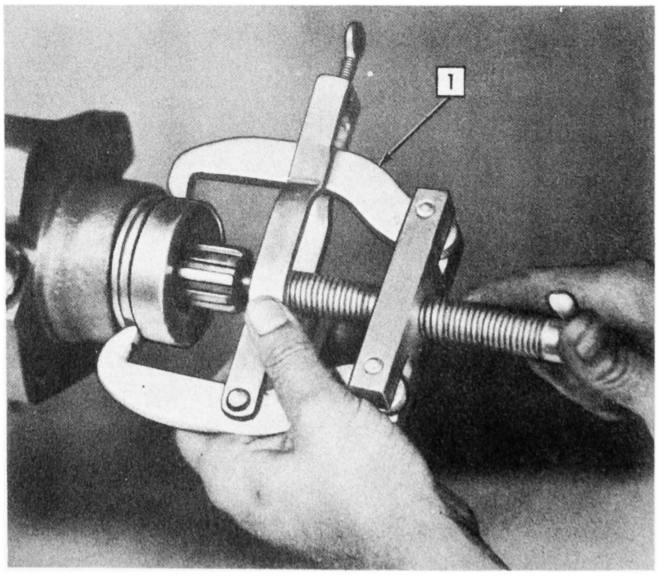
1. Governor assembly

Figure 7—Remove the Governor Assembly.

Removing the Overdrive Rear Oil Seal and Adapter

The overdrive rear oil seal is pressed into an oil seal adapter. The adapter can be removed from the overdrive case by using tool J-2497. (Fig. 8.)

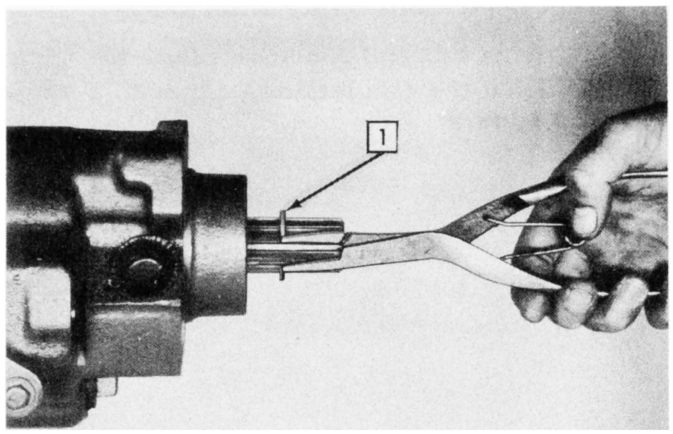
On the "600" Series the oil seal is pressed into the case.



1. Rear oil seal removing tool (J-2497)

Figure 8—Use Tool J-2497 to Remove the Rear Oil Seal Adapter.

This oil seal adapter must be removed from the overdrive case before removing the main shaft snap ring. (Fig. 9.)

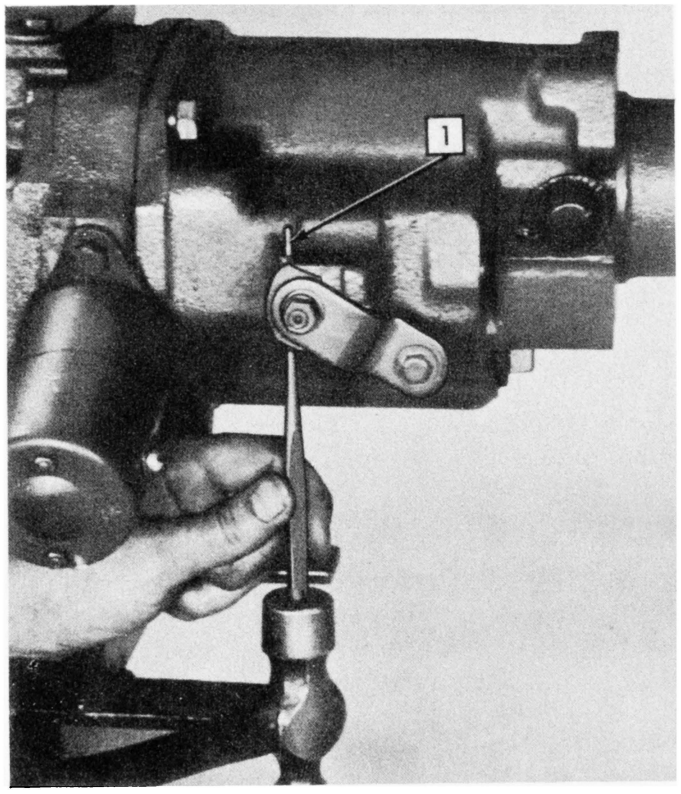


1. Snap ring

Figure 9—Remove Main Shaft Snap Ring Using Snap Ring Pliers.

Disengaging the Shift Shaft

Drive out the lock pin that holds the overdrive shift shaft in the overdrive case. (Fig. 10.)



1. Lock pin

Figure 10—Drive Out Tapered Lock Pin.

Pull the shaft out from the case about ⅜ of an inch. Do this with a turning action so as to disengage the shaft from the shift rail.

Removing the Overdrive Case

Take out the cap screws that hold the overdrive case to the transmission. Then separate the overdrive from the transmission at the rear of the overdrive rear bearing adapter.

CAUTION: *Do not separate the overdrive rear bearing adapter from the transmission case. As soon as the overdrive case has been pulled far enough away from the bearing adapter to provide clearance, insert a holding bolt through the bearing adapter and bolt it to the transmission.*

As you remove the overdrive case, keep tapping the end of the main shaft with a soft hammer. This will keep the shaft from coming out, and will prevent the free wheeling rollers from dropping into the case. The front bearing, speedometer and governor drive gears will remain on the main shaft. (Fig. 11.)

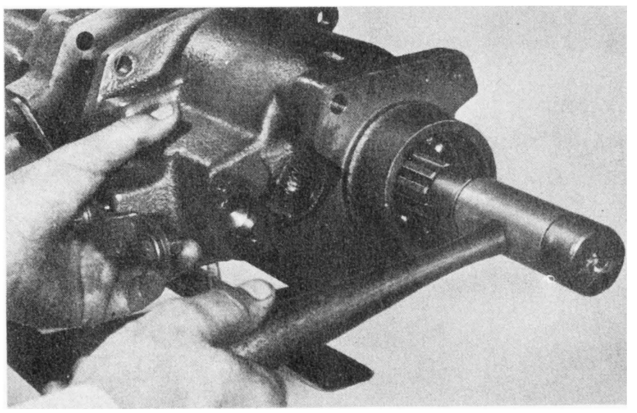
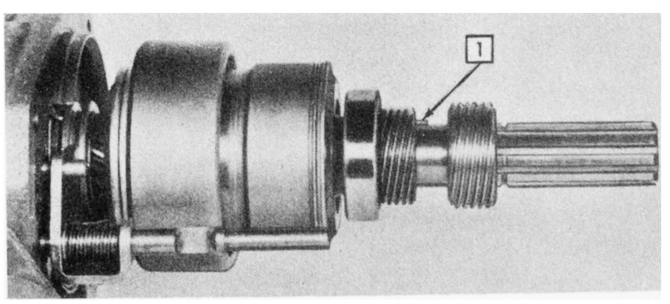


Figure 11—To Keep the Free Wheeling Rollers from Falling out, Tap the Main Shaft with a Soft Hammer as You Remove the Overdrive Case.

Both the speedometer and governor drive gears are retained by a Woodruff key and can easily be slid off the main shaft. (Fig. 12.)

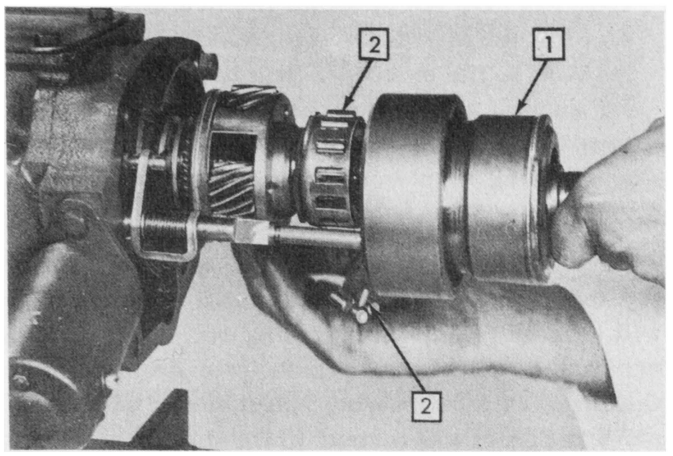


1. Woodruff key

Figure 12—Both Governor and Speedometer Drive Gears are Retained on the Shaft by a Woodruff Key.

Removing the Main Shaft and Ring Gear

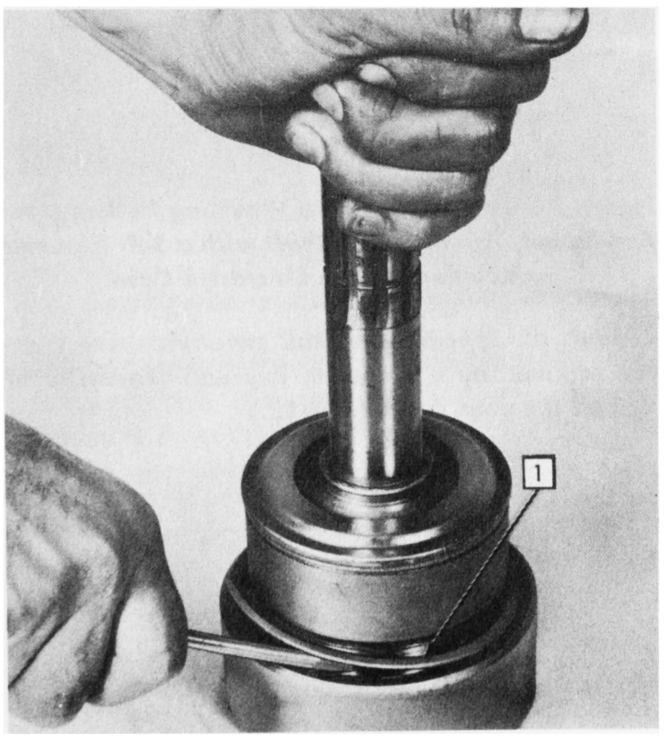
Remove the overdrive main shaft and ring gear. As the main shaft is being removed, the rollers will drop out, so keep one hand underneath to catch them. (Fig. 13.)



1. Main shaft
2. Rollers

Figure 13—Remove the Main Shaft and Rollers.

To remove the ring gear from the main shaft, just remove the large ring gear snap ring. The gear will then separate from the main shaft. (Fig. 14.)

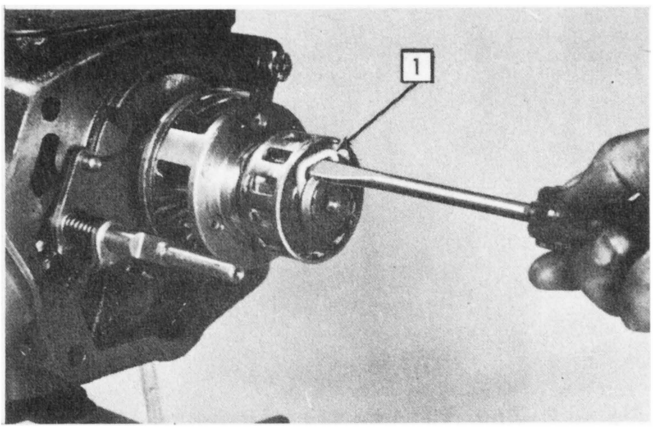


1. Snap ring

Figure 14—Remove the Snap Ring to Separate the Ring Gear from the Main Shaft.

Removing the Cam and Pinion Cage

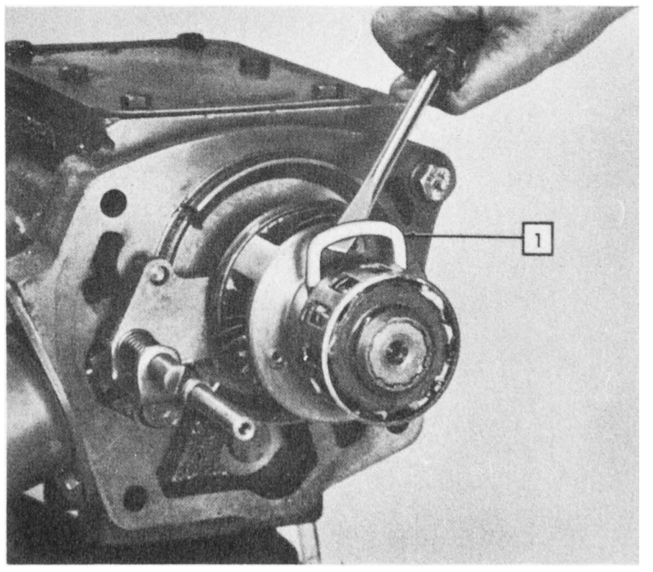
To remove the cam and pinion cage from the spline shaft, take out the cam retaining clip with a screw driver. (Fig. 15.)



1. Cam retaining clip

Figure 15—Remove Cam Retaining Clip with Screw Driver.

The cam can then be separated from the pinion cage by removing the pinion cage retaining clip, and separating the two units. (Fig. 16.)



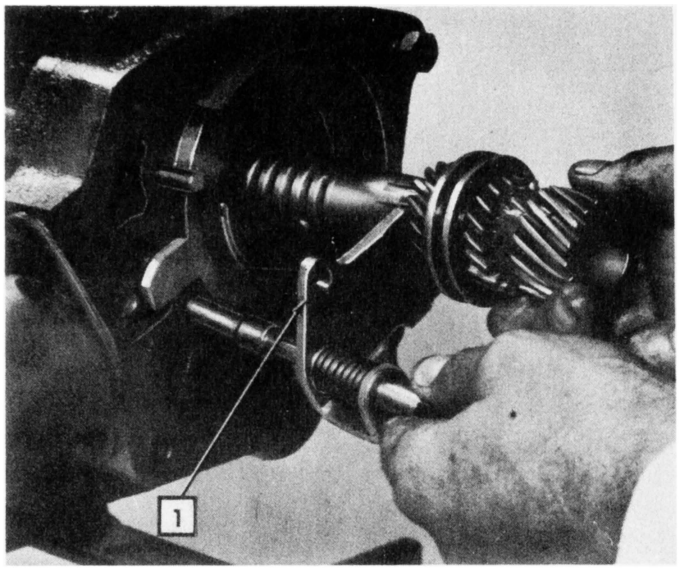
1. Pinion cage retaining clip

Figure 16—The Cam can be Separated from the Pinion Cage by Removing the Pinion Cage Retaining Clip and Sliding the Cage off the Spline Shaft.

Removing the Sun Gear and Shifter Rod Assembly

Remove the overdrive shifter rod and sun gear and collar from the spline shaft as a unit. When the sun

gear is free of the sun gear hub, the shifter rod assembly can be separated from the sun gear shifting collar.

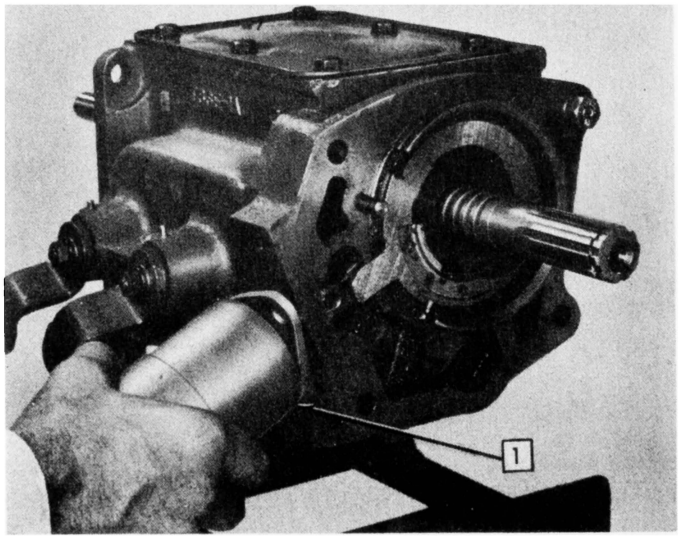


1. Shifter rod assembly

Figure 17—The Overdrive Shifter Rod Assembly and the Sun Gear and Collar can be Removed from the Spline Togather.

Removing the Solenoid

Take out the two cap screws that hold the solenoid to the rear bearing adapter. Turn the unit one-quarter turn clockwise to release the solenoid plunger from the overdrive locking pawl. The solenoid can then be removed. (Fig. 18.)

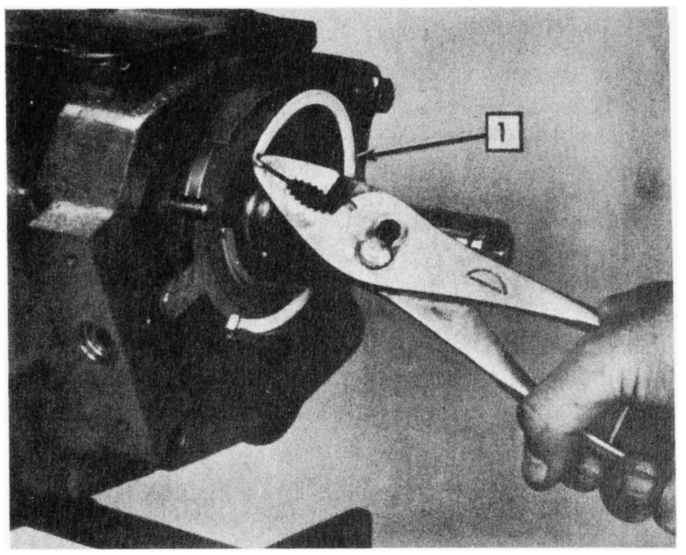


1. Solenoid

Figure 18—Remove the Overdrive Solenoid by Taking out the Cap Screws, Turning the Unit One Quarter Turn Clockwise, and Pulling it out.

Removing the Cover Plate, Sun Gear Hub and Balk Ring Assembly, and Locking Pawl

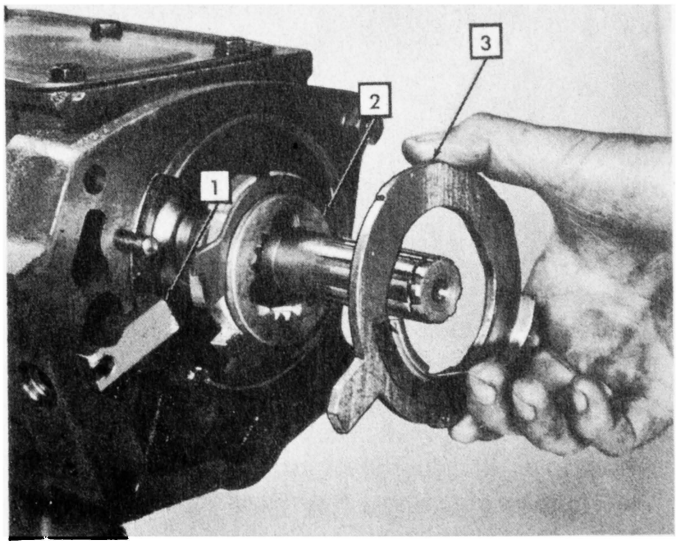
Using a pair of pliers, remove the large snap ring that holds the sun gear cover plate, hub and overdrive balk ring in place. (Fig. 19.)



1. Snap ring

Figure 19—Remove Cover Plate Snap Ring.

Remove the cover plate and trough assembly and the sun gear hub assembly. Then the overdrive locking pawl can be lifted out. (Fig. 20.)



1. Locking pawl
2. Sun gear hub and balk ring assembly
3. Cover plate

Figure 20—Removing the Cover Plate Allows the Sun Gear Hub Assembly and the Locking Pawl to be Removed.

Removing the Lockout Spring and Shift Shaft

The shifter shaft can easily be removed from inside the overdrive case. Then remove the shifter lever and shaft. Discard the oil seal—a new one will be used on reassembly.

Removing the Main Shaft Bearing

Remove the rear snap ring and tap the bearing out through the rear of the overdrive case. The inner snap ring can then be removed.

Removing the Spline Shaft and Bearing Adapter

Normally, when the locking pawl has been removed, the overdrive is completely disassembled. However, if the transmission spline shaft or the rear bearing adapter must be removed, remove the bearing adapter and the spline shaft with the gears and synchro-clutch as an assembly, just as you would in disassembling the transmission itself. (Fig. 21.)

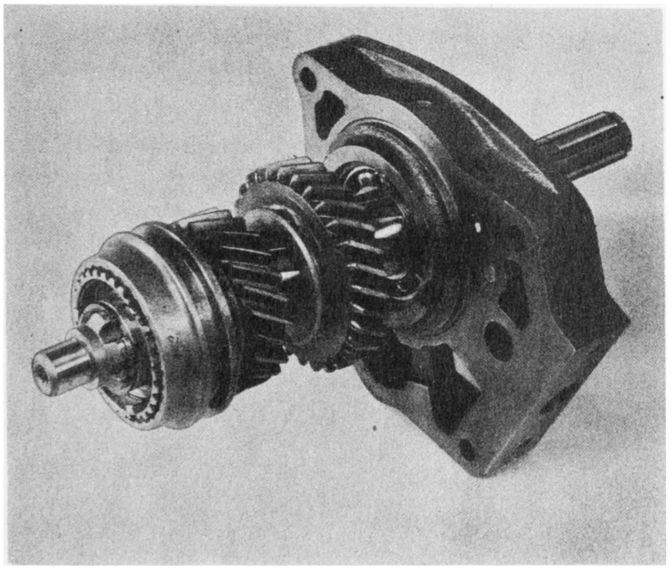
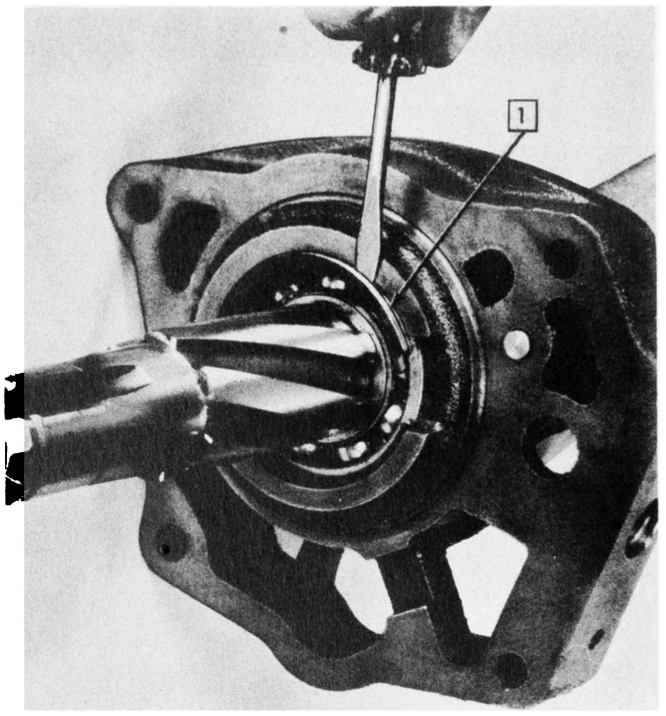


Figure 21—To Remove Either the Bearing Adapter or the Spline Shaft, it is Necessary to Remove the Entire Spline Shaft Assembly.

Remove all the gears from the shaft. Then remove the large snap ring from the transmission side of the rear bearing adapter and press the spline shaft and bearing out of the bearing adapter. While doing this, be careful to avoid damage to the oil baffle.

Finally, remove the bearing snap ring and press the bearing off the shaft. (Fig. 22.)



1. Snap ring

Figure 22—Removing the Large Snap Ring in the Bearing Adapter Permits the Spline Shaft and Bearing to be Removed from the Adapter.

Inspecting Parts

There are no internal adjustments to be made in the Nash overdrives. However, for assurance of good operation, every part should be inspected carefully, to be sure it is in good condition. If all parts are up to standard and correctly assembled, the unit will operate properly.

Pinion Cage and Gears

Examine the pinion gears in the planetary pinion cage for worn, cracked or chipped teeth. Rotate each gear to see that it does not bind on the pinion shaft. Then examine the oil slinger which is a part of the pinion cage. This slinger supplies lubrication to the pinion gears. If it is bent or otherwise damaged, it will not operate efficiently.

Sun Gear Hub and Balk Ring

Test the fit and tension of the balk ring on the sun gear hub. When you apply pressure on the end of the ring in a direction that tends to spread or open the ring, it should slide around the hub. When you apply pressure in a direction that tends to close the ring, it should bind against the hub so that it will not turn. (Fig. 23.)

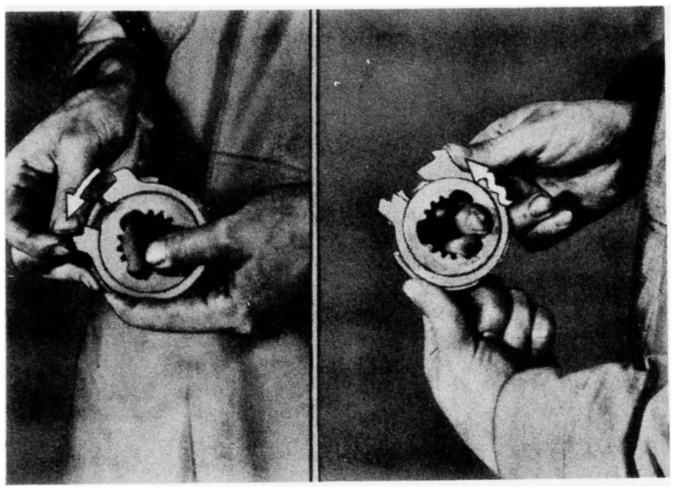


Figure 23—Testing Balk Ring Tension. Left: When You Push one end of the Ring Away from the other, the Ring Should Slide Around the Hub. Right: When You Push one end Toward the other, the Ring Should Grab and Hold.

Free Wheeling Rollers and Housing

Examine each of the free wheeling rollers and the overdrive main shaft housing in which they turn for wear, scoring, rough surfaces or any indications that the rollers may be slipping in the housing.

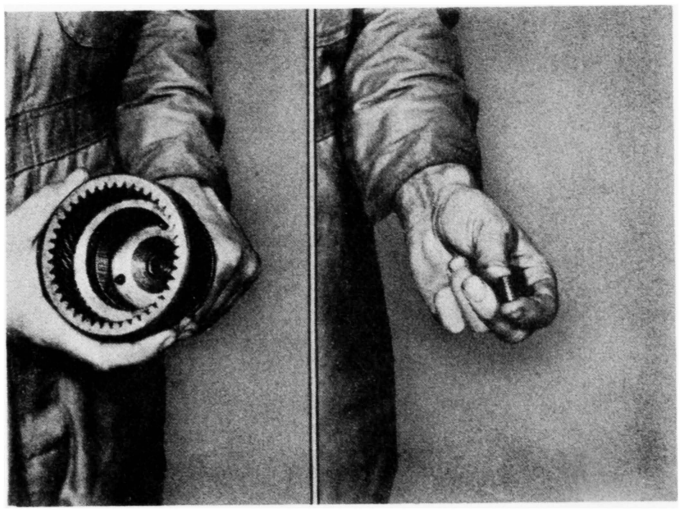


Figure 24—Inspection of Overdrive Parts is Important. A Worn Main Shaft Housing, like that Above, Allows the Free Wheeling Rollers to Slip.

The Cam Assembly

Inspect the roller cams on the free wheel hub for wear or grooving. (Fig. 24.)

Test the action of the two cam retaining springs. These springs are designed to twist the cam in a clockwise direction—thus holding the rollers up on the cam. If this spring action is slow or retarded, it will result in a loud thump whenever the free wheeling unit engages on acceleration. To test it, grasp the cam roller retainer and turn it counter-clockwise. Then release it suddenly. If the retainer springs quickly back in a clockwise direction, the springs are all right. If the action is sluggish, replace the springs. (Fig. 25.)

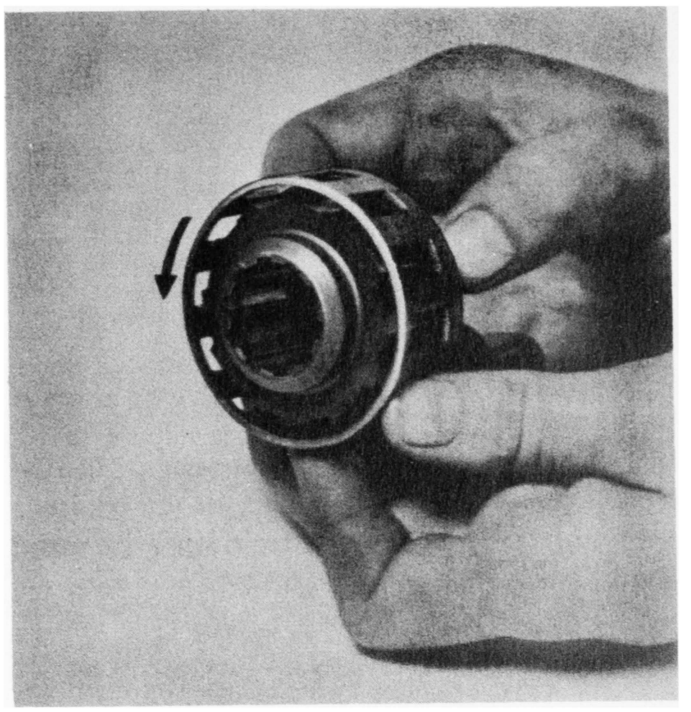


Figure 25—When You Twist the Cam Roller Retainer Counter-clockwise, the Two Springs Should Snap it Back Quickly.

REASSEMBLING THE OVERDRIVE

When all parts have been carefully inspected, the unit is ready for reassembly. As each part is assembled, be sure it is absolutely clean and lubricated with light engine oil. Always use new gaskets and oil seals in reassembly.

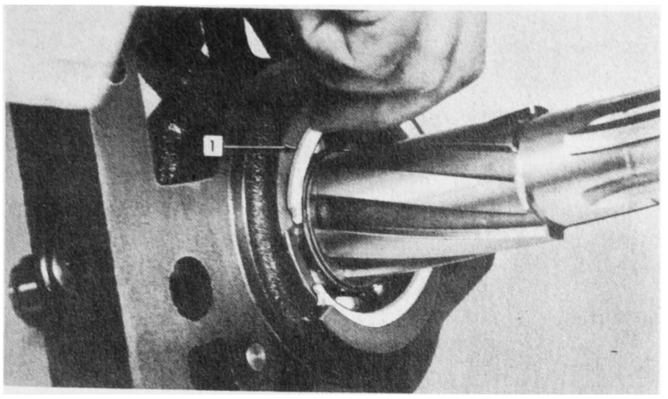
Installing the Spline Shaft and Bearing Adapter

Press the bearing on to the spline shaft, and lock it in place with the small snap ring.

Place the oil baffle in the bearing adapter, with the lip of the baffle toward the overdrive case.

Press the spline shaft and bearing into the bearink adapter, and lock them together with the large bearing snap ring. (Fig. 26.)

Finally, following the instructions in the Transmission Section, replace all the gears on the spline shaft and reinstall the spline shaft and bearing adapter assembly in the transmission. Install a cap screw to hold it in place temporarily.



1. Snap ring

Figure 26—Place the Oil Baffle in Position. Then Press the Spline Shaft and Bearing into the Adapter, Locking them in Place with the Snap Ring.

Reinstalling the Hub and Balk Ring, Locking Pawl and Cover Plate

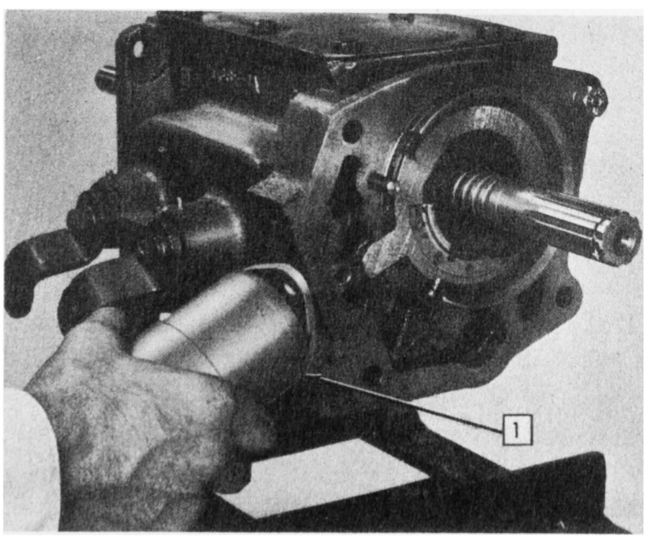
Install the hub and balk ring assembly with the chamfered side of the ring against the sun gear hub.

Install the locking pawl, positioning the pawl and balk ring in the "locked out" position—with the pawl on the step of the ring for correct installation of the solenoid.

Install the cover plate and trough in position and lock it in place with the large snap ring.

Reinstalling the Solenoid

Insert the solenoid plunger in the opening in the bearing adapter and engage it with the notch in the locking pawl. Turn the solenoid one quarter turn counter-clockwise to lock the pawl and plunger together. Pull the solenoid to be sure the plunger is locked with the pawl. Then install the two cap screws loosely. (Fig. 27.)

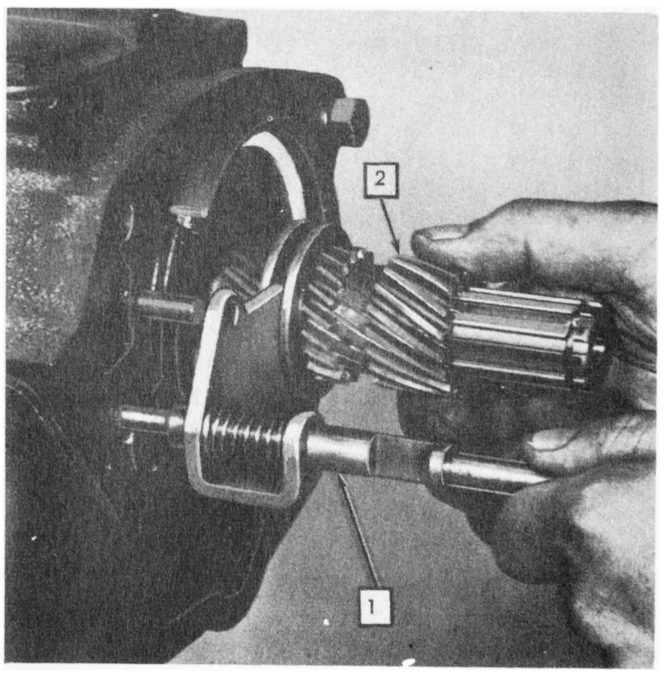


1. Solenoid

Figure 27—Install the Solenoid by Turning it Counter-clockwise so the Plunger will Lock with the Pawl.

Reinstalling the Sun Gear and Shifter Rod Assembly

Install the fork of the shifter rod in the sun gear shift collar. Then hold them together as you slide the sun gear onto the spline shaft and the shifter rod into the hole in the bearing adapter. (Fig. 28.)



1. Shifter rod
2. Sun gear

Figure 28—The Shifter Rod and Fork Assembly is Installed with the Sun Gear and Collar.

Reinstalling the Pinion Cage and Cam

Install the pinion cage assembly on the spline shaft, being careful not to distort the oil slinger. Then slide the free wheeling cam assembly onto the shaft, line up the slots in the pinion cage with the slots in the free wheeling cam and install the pinion cage retaining clip. (Fig. 29.)

Install the free wheeling cam retaining clip.

After installing the retaining clips, shift the sun gear into and out of engagement, to insure clearance between the sun gear and the oil trough.

Reinstalling the Ring Gear and Main Shaft

Replace the ring gear on the overdrive main shaft and lock it in place with a snap ring. (Fig. 30.)

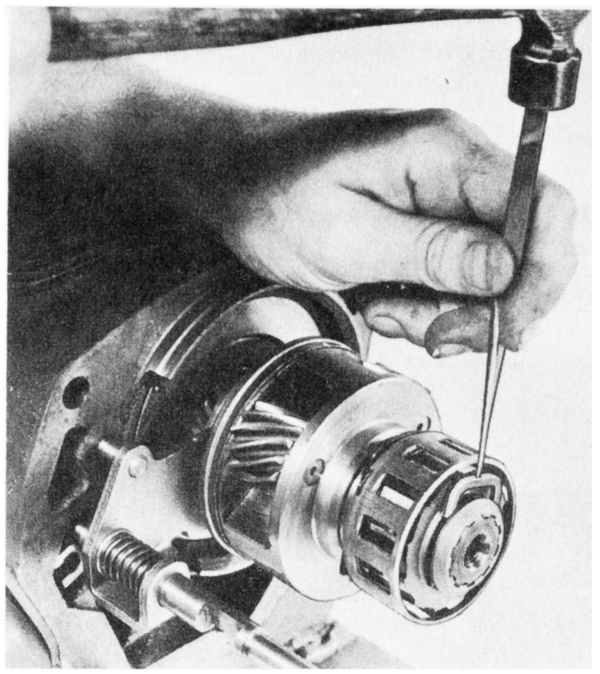


Figure 29—With the Free Wheeling Cam and Pinion Cage on the Spline Shaft, Lock them in Place with the Pinion Cage Retaining Clip and the Free Wheeling Cam Retaining Clip.

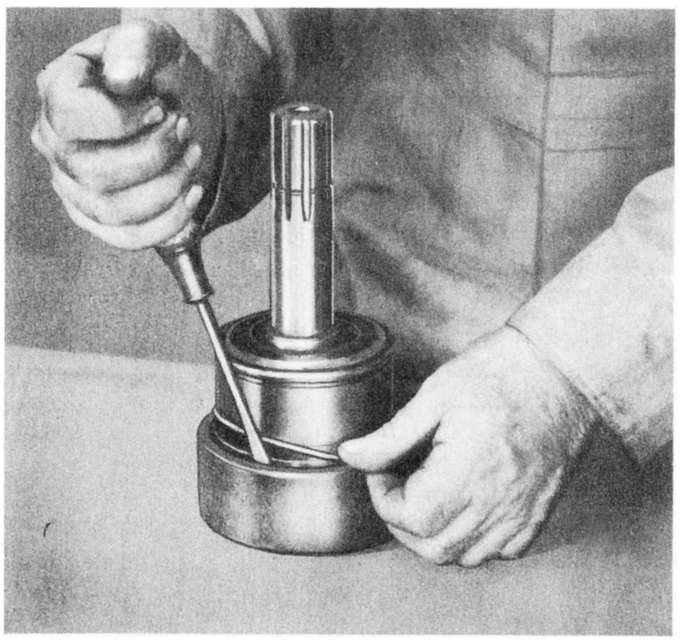
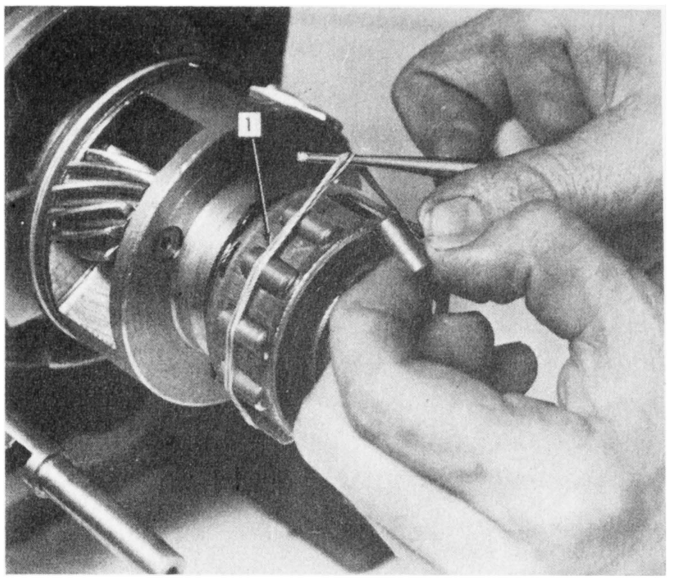


Figure 30—Install a Snap Ring to Hold the Ring Gear on the Main Shaft.

The Free Wheeling Rollers

Before installing the main shaft and ring gear on the free wheeling cam and cage, the free wheeling rollers must be replaced on the cam.

Replace the free wheeling rollers in the free wheeling cam retainer, using heavy grease to hold them in position. A small rubber band placed around the rollers will also help to keep the rollers from dropping out while the main shaft and ring gear is being installed. (Fig. 31.)



1. Rubber band

Figure 31—A Rubber Band Serves to Hold the Free Wheeling Rollers in Position until the Ring Gear and Main Shaft can be Installed.

Now, rotate the cage and roller assembly counterclockwise so that the rollers will be at the bottom of the cams. This will permit the installation of the overdrive main shaft and ring gear assembly. (Fig. 32.)

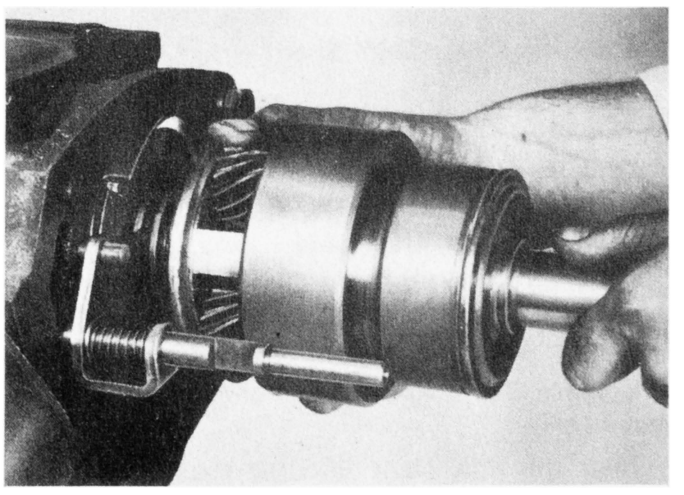


Figure 32—Install the Main Shaft and Ring Gear on the Pinion Cage and Free Wheeling Cam.

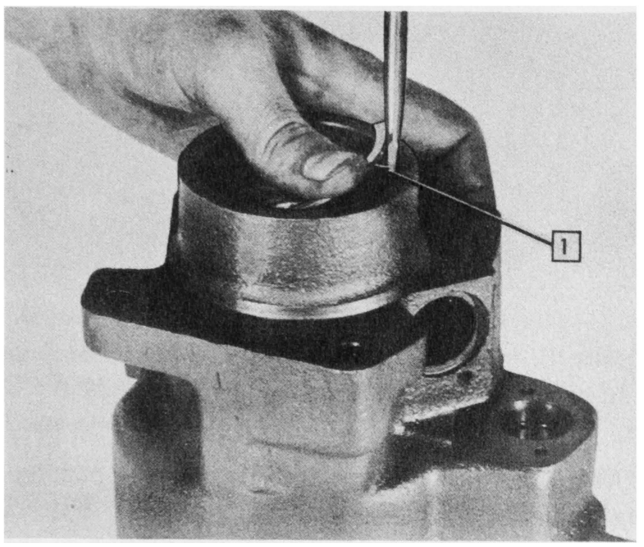
The Rear Bearing, Speedometer and Governor Drive Gears

Slide the rear bearing on the overdrive main shaft. Insert the Woodruff key into the main shaft. Then

install the governor and speedometer drive gears. The governor drive gear, which is smaller in diameter, will be placed on the main shaft against the bearing.

Reinstalling the Main Shaft Rear Bearing in the Case

First, install the rear bearing inner snap ring in the overdrive case. Press the rear bearing in from the rear of the case until it seats against this ring. Then install the rear bearing outer snap ring. (Fig. 33.)



1. Snap ring

Figure 33—Install a Snap Ring on each side of the Overdrive Rear Bearing.

Reinstalling the Shift Shaft and Overdrive Case

Install the shift shaft oil seal, the shift shaft, the shifting lever and the shifter rod spring in the overdrive case. Then remove the bolt holding the bearing adapter to the transmission case, and work the overdrive case onto the overdrive assembly. Using a long punch through the shift switch opening guide the shifter rod through the spring and case.

Replace the cap screws and tighten them securely.

Push the shift shaft into the case so that the operating cam will engage with the slot in the shift rod. Then drive in the lock pin to hold the shaft in position.

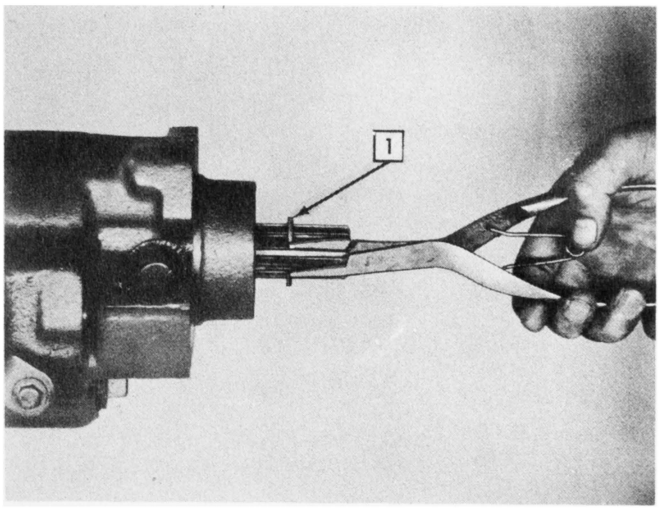
NOTE: *Inspect the operation of the shift lever, as follows:*

With the lever against the machined stop on the boss of the case, a slight free movement with no tension should be evident. Excessive movement with no tension indicates that the shift rod is binding in the case.

Finally, tighten the solenoid cap screws.

Completing the Reassembly of the Overdrive

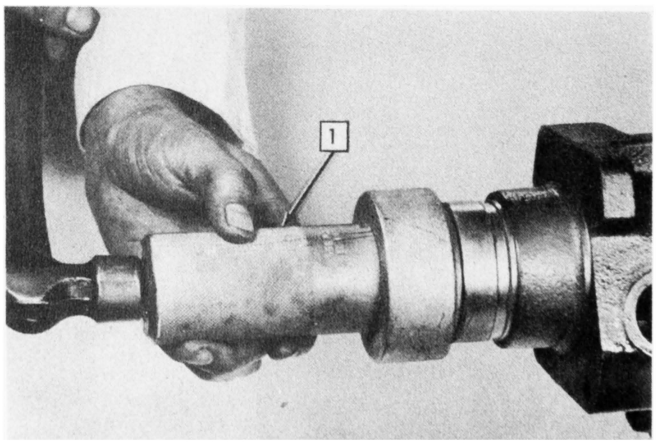
Install the main shaft snap ring. (Fig. 34.)



1. Snap ring

Figure 34—Use Snap Ring Pliers to Install the Snap Ring.

Next, install the oil seal adapter and oil seal, using tool J-1556, the rear axle pinion shaft oil seal installing tool. (Fig. 35.)



1. Tool J-1556

Figure 35—Install Oil Seal, Using Tool J-1556.

Now, install the shift switch, governor and torque tube adapter.

LUBRICATION OF THE OVERDRIVE

Check the lubricant level of the transmission and the overdrive every 2,000 miles. Transmission and overdrive units should be filled to the drain plug level on the right side of both units.

Drain and clean twice a year, or every 10,000 miles, using only flushing oils. Do not use gasoline, kerosene, steam, etc.

For atmospheric temperatures above 32° Fahrenheit, use Mineral Oil Gear Lubricant SAE No. 90 in the transmission and overdrive.

Below 32° Fahrenheit, use SAE No. 80.

Where difficulty in shifting is experienced in sub-zero temperatures, dilute the transmission and overdrive oil as required, using light engine oil.

LUBRICATION CHART

Nash Transmissions and Overdrives

Standard	Capacity (U. S. Measures)	Including Overdrive	Capacity (U. S. Measures)
1949 "600" Series	2¼ pts.	1949 "600" Series	3½ pts.
1949 "Ambassador 6" Series	2¼ pts.	1949 "Ambassador 6" Series	3½ pts.

SHIFTING SYSTEM SECTION



Nash

TECHNICAL SERVICE MANUAL

ADJUSTING THE SHIFTING MECHANISM 2

DISASSEMBLING THE SHIFTING MECHANISM 2

ASSEMBLING THE SHIFTING MECHANISM 4

Printed in U.S.A.

September 1, 1948

ADJUSTING THE SHIFTING MECHANISM

Place the gear shift lever in the neutral position. This will bring the two gear shift operating levers into the correct position so that the aligning tool J-1390 can be inserted in the small holes in the levers and the bracket (Fig. 1).

Disconnect the gear shift rods at the operating levers, and place the gear shift operating levers in the neutral position.

With the aligning tool in this position and the transmission shift levers in neutral, adjust the shifting rods at the transmission end. After the rods have been adjusted and again connected to the transmission, remove the aligning tool.

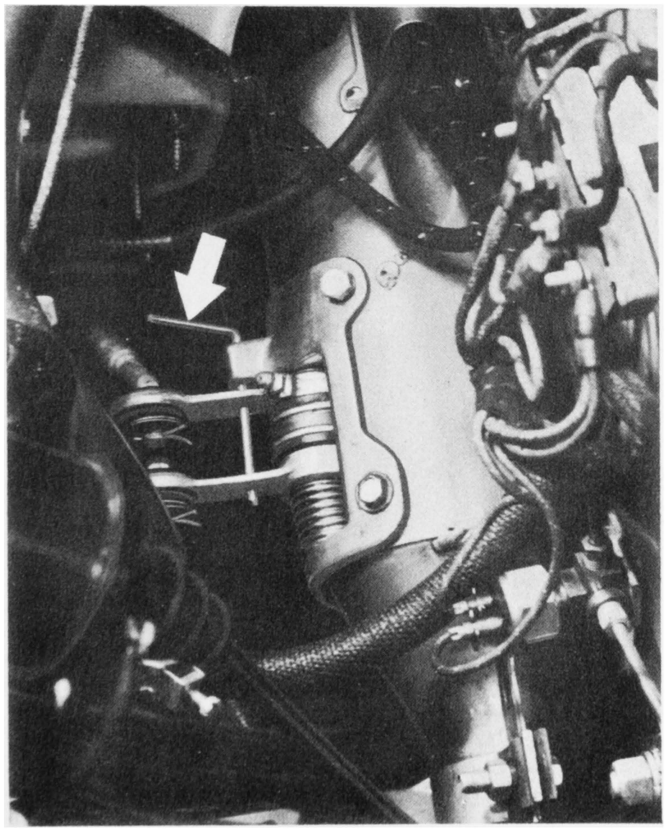


Figure 1—Aligning Pin J-1390 is used to Retain the Operating Levers in a Neutral Position while Adjusting the Shifting Rods.

CAUTION: *Be careful not to move the transmission levers out of the neutral position as the adjustment is being made.*

DISASSEMBLING THE SHIFTING MECHANISM

If it should be necessary to remove the shifting mechanism from the steering jacket tube, first remove the horn blower parts (assembly sequence shown in the Electrical Section). Then remove the steering wheel nut and pull the steering wheel using puller J-2982 (Fig. 2). Now remove the ignition switch mounting bolt from the bearing retainer at the top of the steering jacket tube.

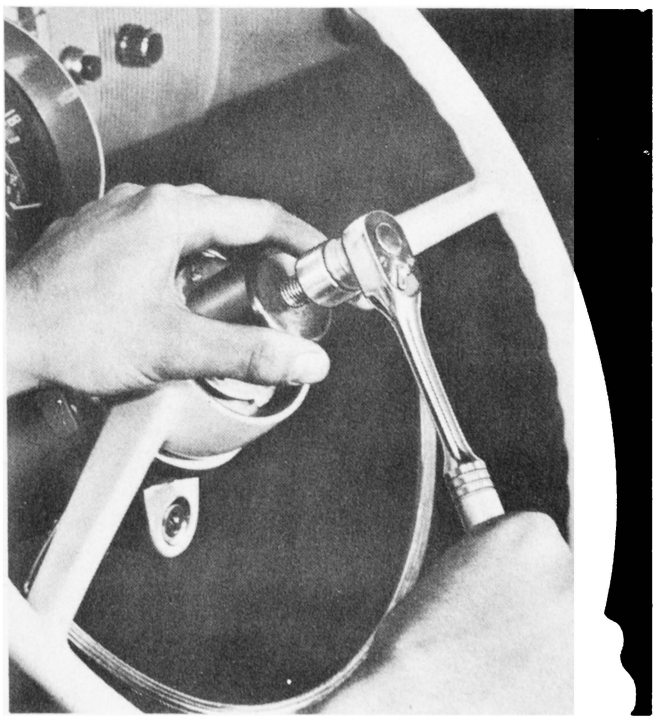


Figure 2—Pull the Steering Wheel Assembly with Tool J-2982.

Remove the three metal screws that hold the bearing retainer to the steering jacket tube and remove the bearing retainer (Fig. 3).

DISASSEMBLING THE SHIFTING MECHANISM

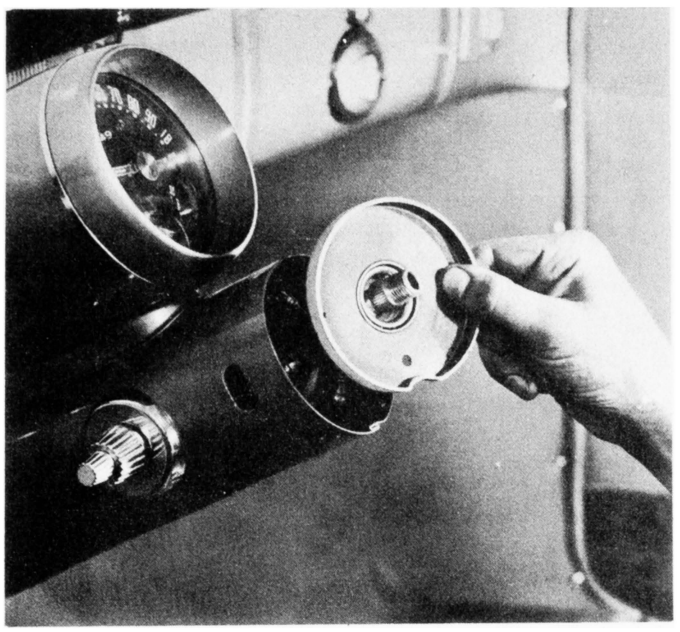


Figure 3—Lift Bearing Retainer from the Steering Jacket Tube.

Remove the gear shift lever knob and install in its place two hex nuts. Lock these nuts together on the threads of the shift lever so that the lever can be removed from the operating shaft as shown in Figure 4.

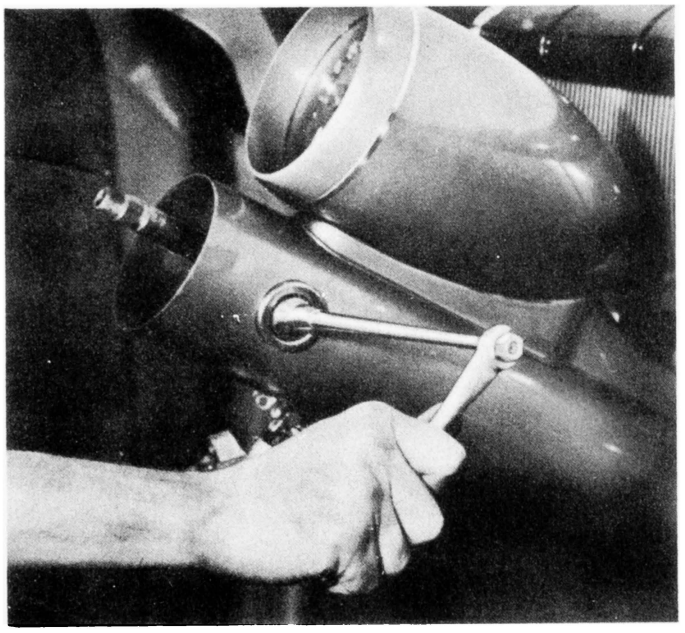
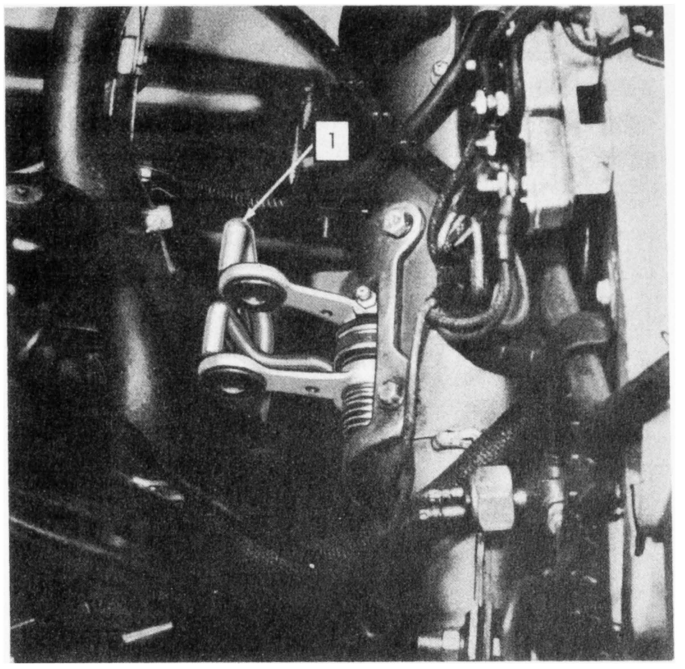


Figure 4—Remove the Gear Shift Lever from the Operating Shaft.

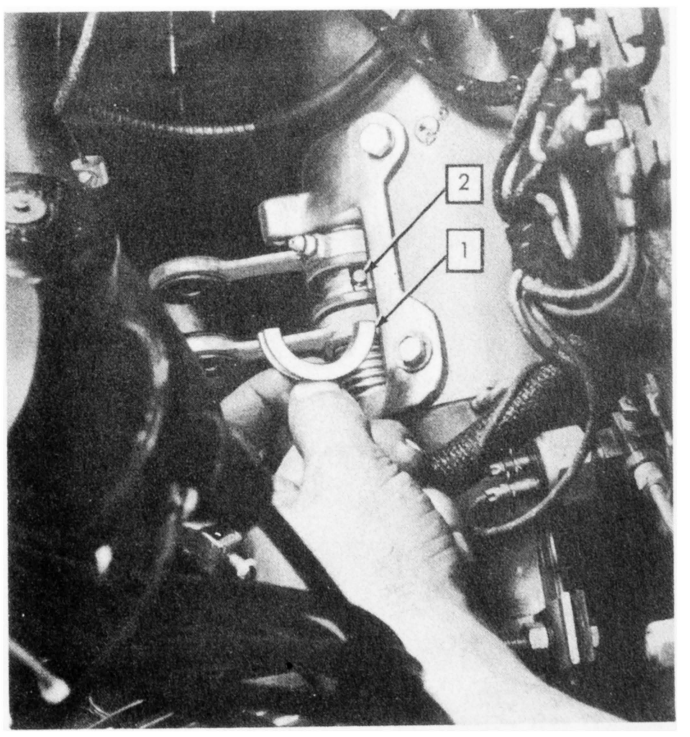
Disconnect the gear shift rods from the gear shift operating levers at the bottom of the steering jacket tube by removing the cotter pins and lifting the rod out of the levers, as shown in Figure 5.



1. Gear shift rods

Figure 5—Remove the Gear Shift Rods from the Levers.

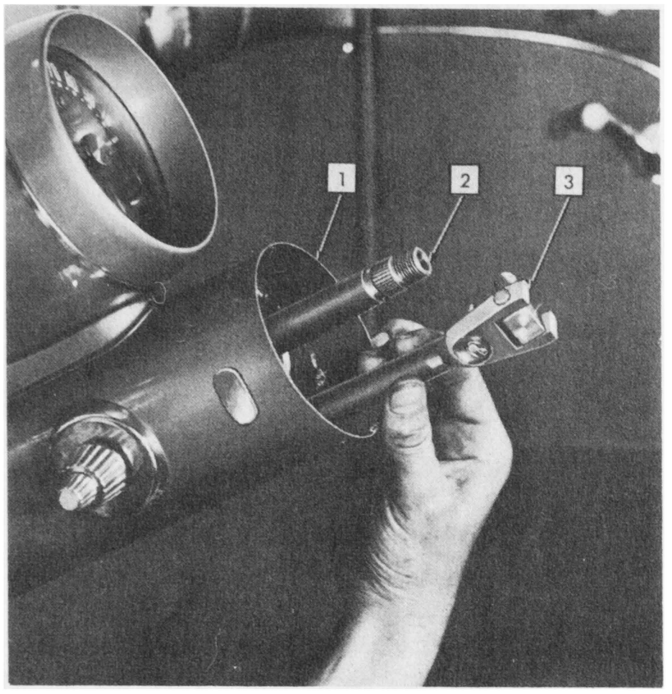
Remove the dirt seal spacer retainer from between the operating shift levers, and remove the two halves of the spacer (Fig. 6).



1. Dirt seal spacer
2. Selector pin

Figure 6—Remove Dirt Seal Spacer.

Push out the selector pin (part way only) from the top (Fig. 6) and remove the pin from the underside of the operating shaft. This will allow the operating shaft to be pulled free from the shift levers. The operating shaft is removed through the top of the steering jacket tube as shown in Figure 7.



1. Steering column jacket tube
2. Steering shaft tube
3. Operating shaft

Figure 7—Remove the Shift Operating Shaft from the Top of the Steering Jacket Tube.

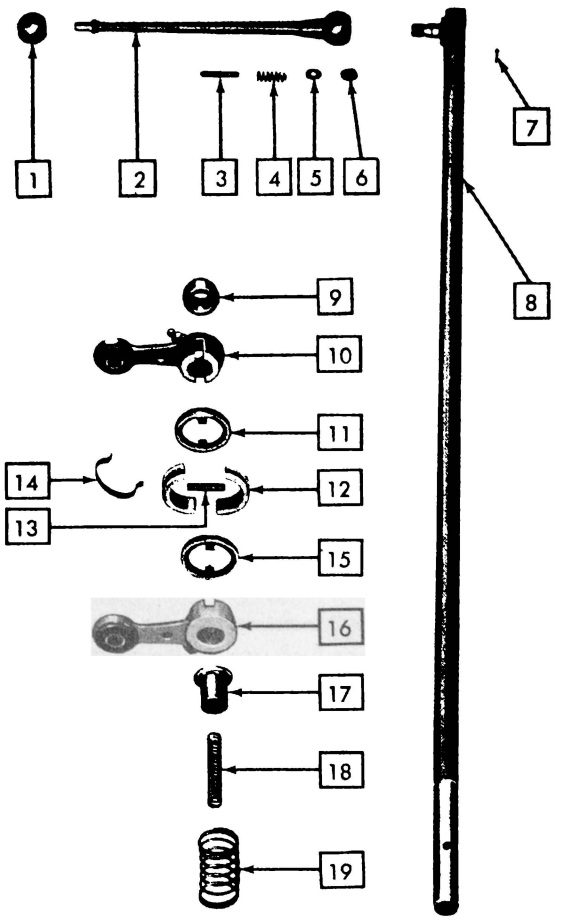
The operating levers, dirt seals, springs and bronze fulcrum will remain in position at the bottom of the steering jacket tube as the operating shaft is removed.

Now remove the large outer spring and the spacer from below the low and reverse shifting lever. Refer to Figure 8. Then remove the operating levers, dirt seals and bronze fulcrum.

The inner spring (No. 18, Fig. 8) will come out with the operating shaft.

ASSEMBLING THE SHIFTING MECHANISM

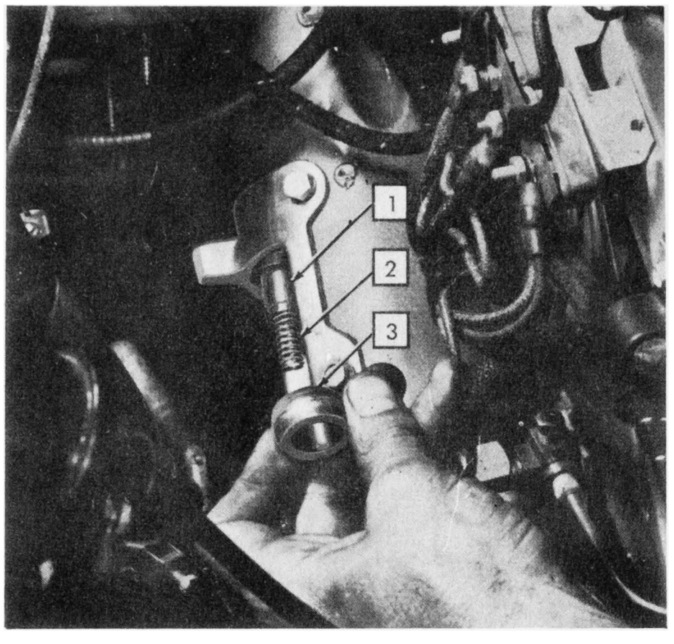
Install the operating shaft through the top of the steering gear jacket tube, just far enough so that it appears in the recess for the shifting levers in the lower end of the steering gear jacket tube. Then install the inner spring in the end of the operating shaft. Now lubricate the bronze fulcrum and install it over the end of the operating shaft as shown in Figure 9.



1. Lever ball
2. Gear shift lever
3. Pressure spring pin
4. Pressure spring
5. Pressure spring washer
6. Pressure spring washer cushion
7. Cotter pin
8. Operating shaft
9. Operating shaft bronze fulcrum
10. Gear operating shift lever
11. Dirt seal
12. Dirt seal spacer
13. Selector pin
14. Dirt seal spacer retainer
15. Dirt seal
16. Gear shift operating lever
17. Spacer
18. Inner spring
19. Outer spring

Figure 8—Steering Post Shift Assembly.

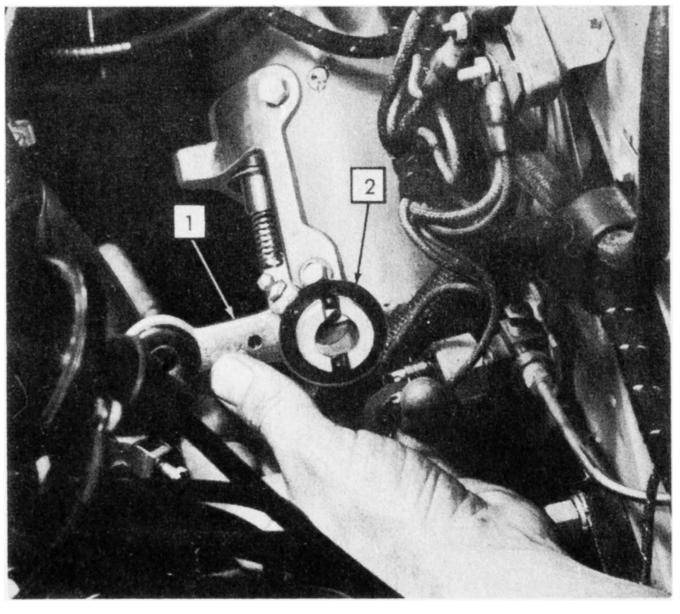
ASSEMBLING THE SHIFTING MECHANISM



1. Bronze fulcrum
2. Inner spring
3. Operating shaft

Figure 9—Installing the Bronze Fulcrum.

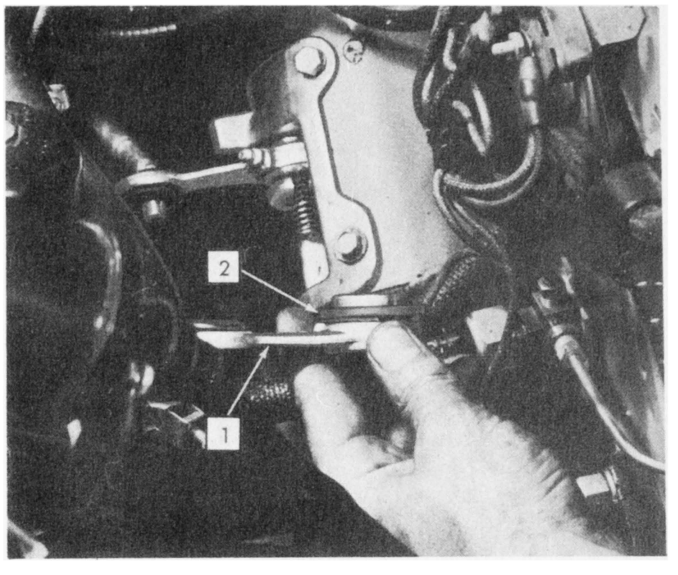
Install a rubber dirt seal over the second and high shifting lever, locating the metal side of the tongue toward the bottom to provide a hard bearing surface for the selector pin. Then install the lever onto the operating shaft so that the notches in the lever are down and will index with the selector pin as shown in Figure 10.



1. Second and high shift operating lever
2. Rubber dirt seal

Figure 10—Installing Second and High Shift Operating Lever and Dirt Seal.

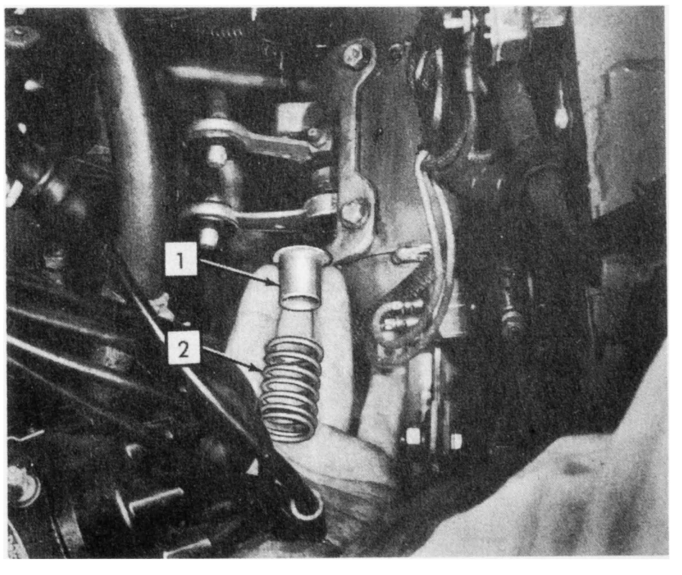
Install a rubber dirt seal over the low and reverse shift operating lever, locating the metal side of the tongue toward the top to provide a hard bearing surface for the selector pin. Then install the shifting lever onto the operating shaft with the notch in the lever pointing up as shown in Figure 11.



1. Low and reverse shift operating lever
2. Rubber dirt seal

Figure 11—Installing the Low and Reverse Shift Operating Lever with Rubber Dirt Seal.

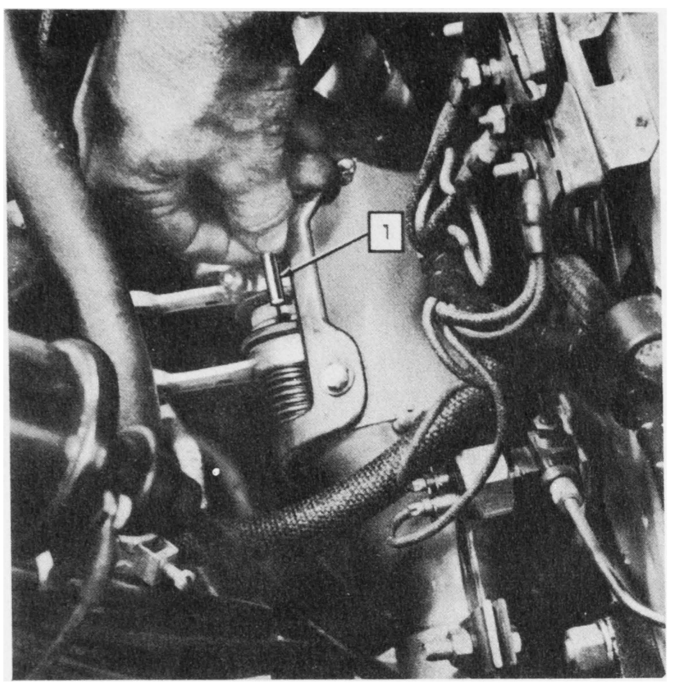
Install the spacer and the large outer spring over the lower end of the operating shaft, as the shaft is being lowered in the steering jacket tube (Fig. 12).



1. Spacer
2. Large outer spring

Figure 12—Installing the Spacer and the Large Outer Spring.

Turn the operating shaft so that the hole in the shaft for the selector pin will index with the notches in the shifting levers, and install the selector pin as shown in Figure 13.

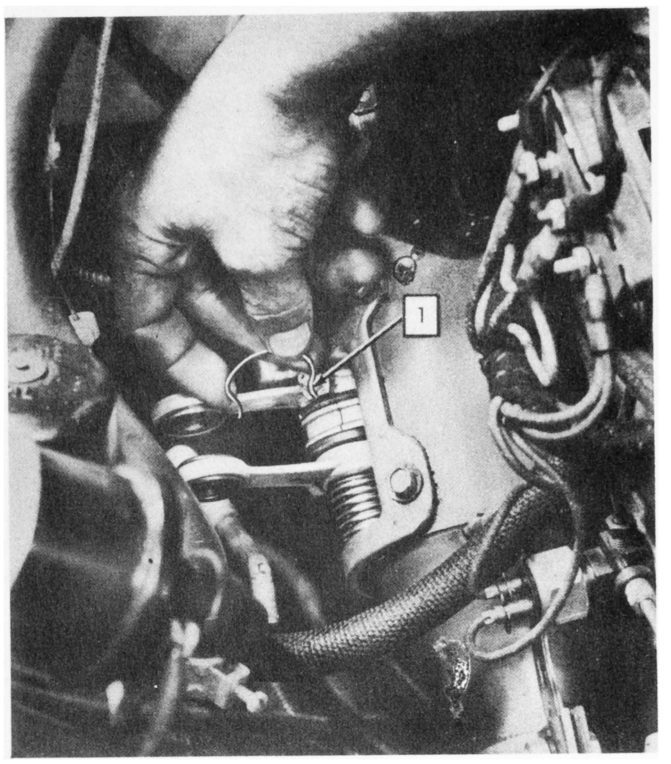


1. Selector pin

Figure 13—Installing the Selector Pin.

Install the two halves of the spacer (refer to Figure 6) and secure in position by installing the dirt seal spacer retainer as shown in Figure 14.

Adjust the shifting mechanism as outlined on page 2. Then install the operating shift lever, tightening it into the operating shaft by the use of two lock nuts—the same ones used when the lever was removed. Then replace the gear shift lever knob.



1. Retainer

Figure 14—Installing the Dirt Seal Spacer Retainer.

Install the bearing retainer (Fig. 2), steering wheel and horn blower parts.

CAUTION: *Make sure that the steering wheel nut is drawn to 30 ft. lbs. torque.*

Lubricate the shifting mechanism with pressure lubricant.

BRAKES – WHEELS – HUBS – DRUMS SECTION



Nash

TECHNICAL SERVICE MANUAL

BRAKES 2

Hydraulic System 3

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Brake Adjustments 5

Brake Pedal Adjustment 7

Parking Brake Adjustment 7

WHEELS AND TIRES 8

Front Wheel Bearing Adjustment 9

Rear Wheel Bearing Replacement 10

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September 1, 1948

BRAKES AND WHEELS—HUBS AND DRUMS SECTION

NASH TECHNICAL SERVICE MANUAL

1949 "600" Series

In this series the Nash-Lockheed Hydraulic system is used in conjunction with brakes of the floating shoe type.

1949 "Ambassador 6" Series

In this series the Nash-Lockheed Hydraulic system is used in conjunction with Bendix Servo type brakes.

GENERAL DESCRIPTION

1949 "600" and "Ambassador 6" Series

The braking system consists of a combination reservoir and master cylinder in which hydraulic pressure is created by foot-pedal pressure; tubing and flexible hose to convey this pressure to wheel cylinders; and wheel cylinders which have opposed pistons pressing against brake-lined shoes. Under pressure from the wheel cylinders, the shoes are expanded outward, contacting the inside surface of the brake drums and creating friction which opposes rotation of the wheels.

The brake assembly on each wheel has brake shoe return springs which retract the shoes when hydraulic pressure is relieved. Retraction of the brake shoes forces the pistons back into the wheel cylinders, causing the fluid column to flow back into the master cylinder reservoir through a compensating port in the master cylinder.

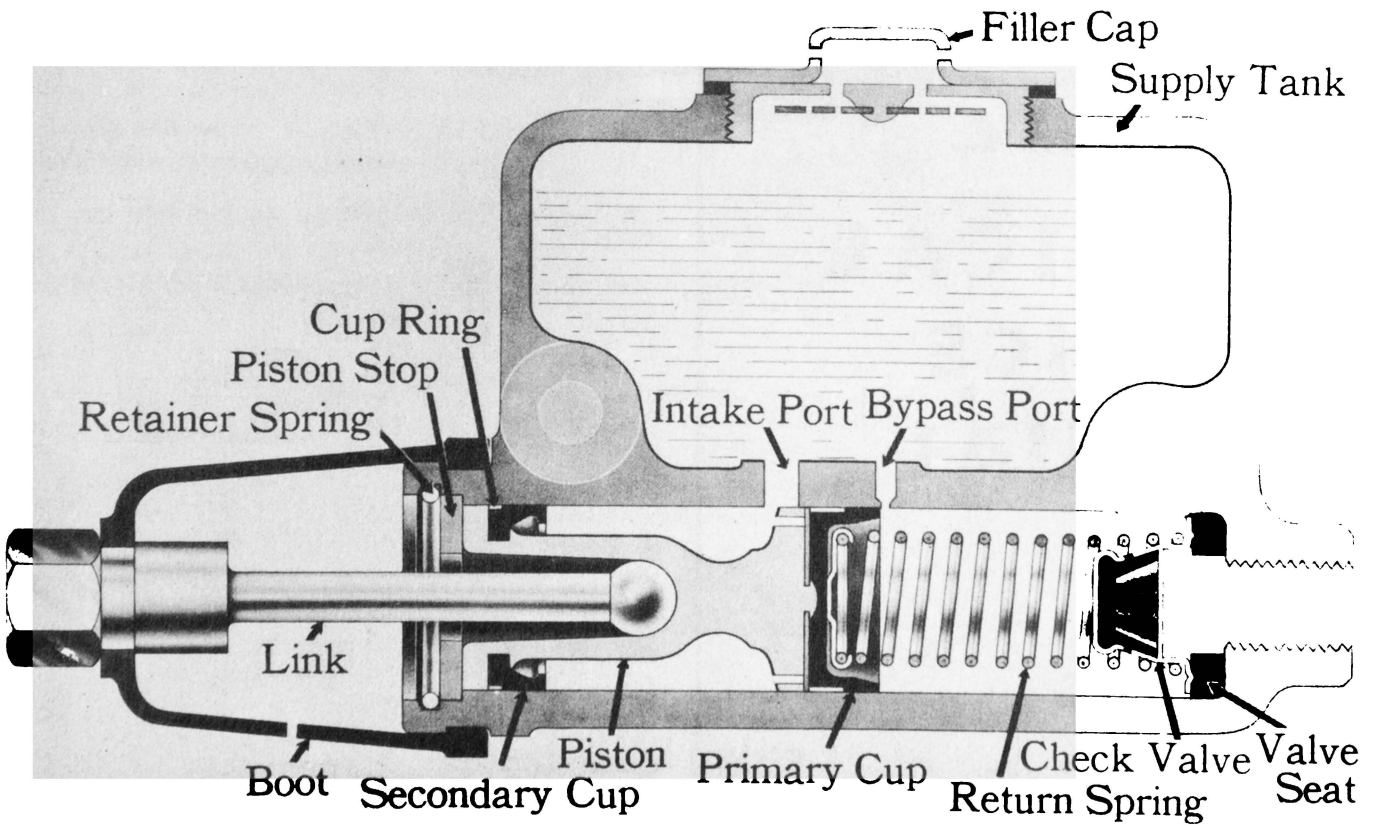
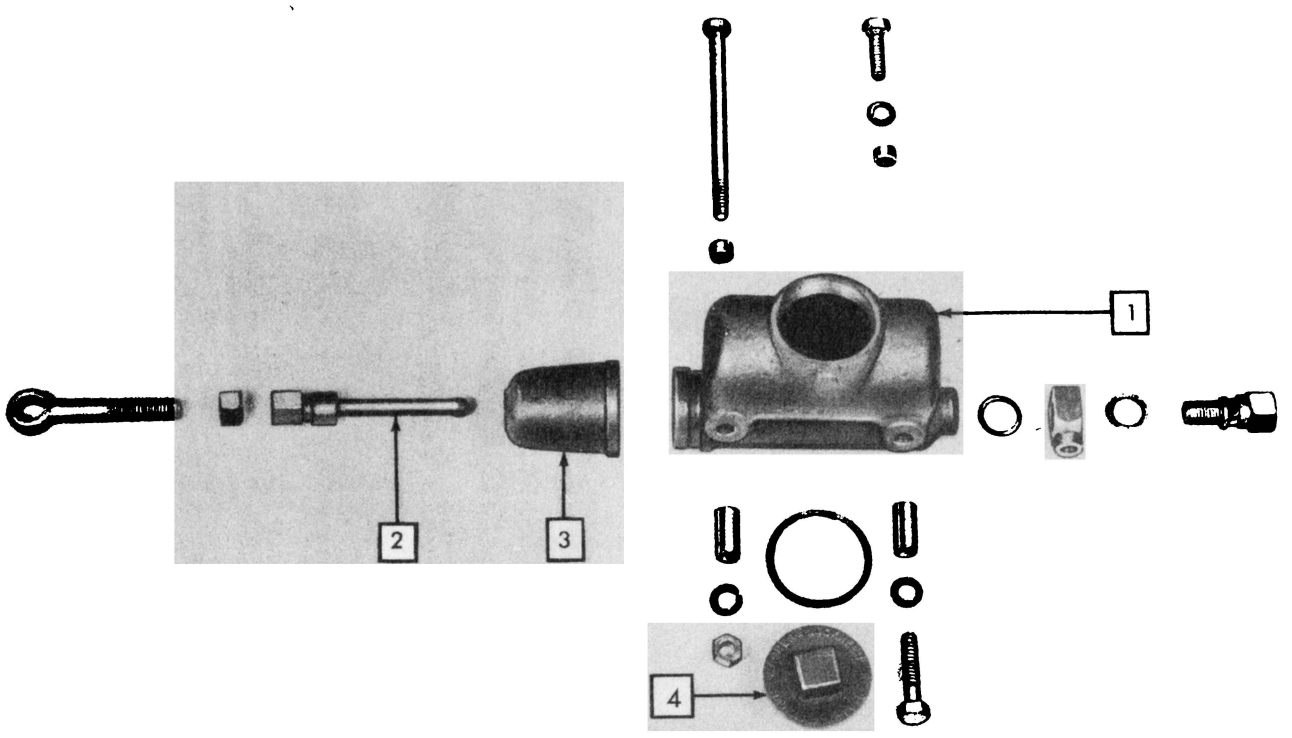


Figure 1—Schematic Drawing, Master Cylinder Operating Parts. (Note that Primary Cup Barely Clears Bypass Port When Fully Retracted).



1. Housing and reservoir
2. Piston push rod
3. Rubber boot
4. Filler cap

Figure 2—Master Cylinder Assembly.

HYDRAULIC SYSTEM

The hydraulic system should be kept free of dirt and moisture. It is advisable to drain the system and flush with pure alcohol once a year.

CAUTION: *Keep mineral oils, gasoline or kerosene out of the system as they cause rubber cups to soften, swell and distort, resulting in failure.*

Master Cylinder

The Master Cylinder (cast integrally with the reservoir) is the compensating type. It contains the fluid actuating piston, return spring, check valve, and piston push rod which makes contact between the piston and the brake pedal operating lever. The piston is equipped with a primary cup of synthetic rubber and a secondary cup of the same material (Fig. 1). When extended, the piston push rod is housed in a synthetic rubber boot which serves to keep foreign matter out of the system. The cylinder is equipped with an intake port and a relief port opening into the reservoir. The master cylinder performs two functions:

1. It maintains a constant volume of fluid in the system at all times, regardless of heating expansion and cooling contraction, and acts as a pump during the "bleeding" operation.
2. It permits additional fluid to enter the system to counterbalance any loss due to gravity seepage.

Wheel Cylinders
1949 "600" and "Ambassador 6" Series

Each wheel cylinder contains a pair of opposed pistons fitted with rubber cups and a small com-

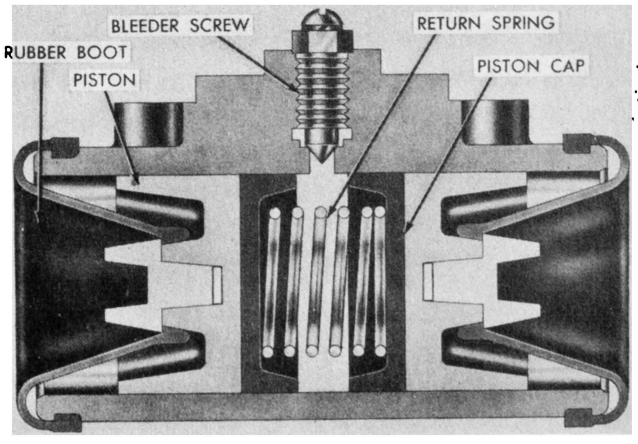
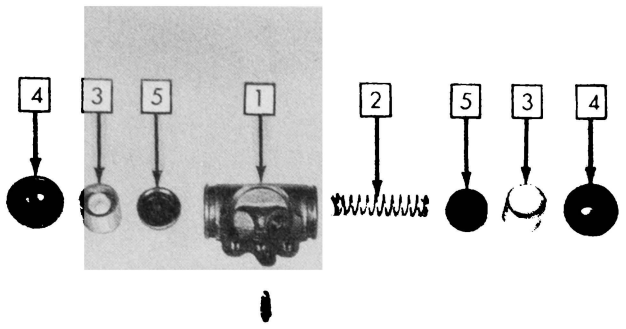


Figure 3—Wheel Cylinder.

pression spring to keep the cups tight against the pistons. The fluid pressure keeps the lips of the cups tight against the wheel cylinder walls. The outer ends of the pistons make contact with the brake shoes to impart the outward braking thrust against the brake drums, as shown in Figure 3.



1. Housing
2. Return spring
3. Piston
4. Boot
5. Rubber cup

Figure 4—Exploded View of Wheel Cylinder.

The wheel cylinders are of the straight bore type. The "600" Series has 1" bore front and 7/8" bore diameter rear wheel cylinders. The "Ambassador 6" Series wheel cylinders are $1\frac{1}{16}$" bore front and 1" bore diameter rear.

Inspection of Wheel Cylinders

After removing the wheel cylinders (Fig. 4) from the brake assembly, remove the boots from both ends of the cylinder. The pistons and cups are forced out of the barrel by the compression spring. Inspect the cups for ragged edges and the cylinder for smoothness. If the cylinder is scratched or pitted, it will be necessary to have it honed to prevent loss of fluid or excessive cup wear.

When reassembling the wheel cylinder, all parts must be washed in clean alcohol, then dipped in Genuine Nash-Lockheed Brake Fluid for lubrication. Reassemble the spring, cups, pistons and boots in the cylinder. New inlet fitting gaskets must be used when connecting the cylinder to the hydraulic system.

Wheel Brake Units

The wheel brake unit is composed of a dust shield assembly or support plate, two brake shoes, the wheel cylinder, and the brake shoe return spring.

Bleeding Hydraulic Lines
1949 "600" and "Ambassador 6" Series

Bleeding the entire brake system is necessary whenever a hydraulic line is disconnected from the master cylinder or whenever the brake pedal is "spongy" in application. If a line is disconnected at one individual wheel, that wheel cylinder only must be bled.

Before bleeding, fill the master cylinder reservoir with Genuine Nash-Lockheed No. 21 Hydraulic Brake Fluid. Keep the cylinder and reservoir full by using a cylinder-filler (pressure or static type).

CAUTION: *While removing the reservoir filler cap, extreme care must be exercised to prevent dirt from entering the reservoir and master cylinder, as dirt getting lodged between the pistons and the cylinder walls may cause failure.*

Remove the cap screw from the end of the bleeder connection (Fig. 3). Screw in the standard bleeder hose and allow it to hang in a clean container, such as a small glass mason jar. Unscrew the bleeder connection 3/4 turn and depress the foot pedal slowly by hand. Allow the brake shoe return springs to return the pedal slowly to "off" position. Repeat the pumping action until enough fluid has passed through to expel all the air from the line. Do this at each of the four wheels, if necessary.

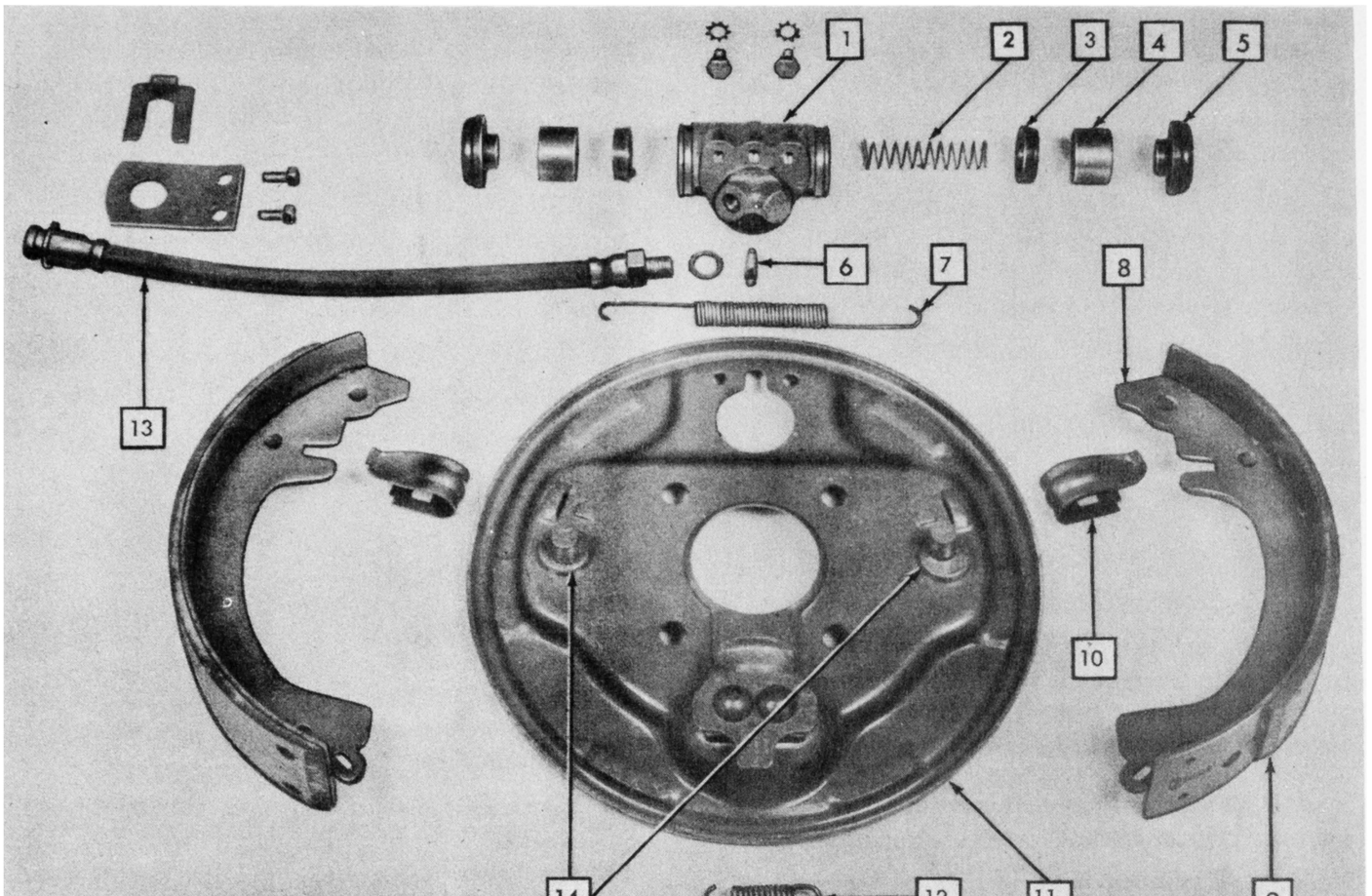
Watch the flow of fluid from the hose, the end of which should be kept below the surface of the fluid; when all air bubbles cease to appear and when the fluid stream is a solid mass, close the bleeder connection.

It is advisable to lock the bleeder screw at the end of the last pressure stroke. Air cannot then follow possible loose threads into the cylinder during the return of the brake pedal.

Fluid withdrawn in the bleeding operation should not be used again. Fluid should be replenished in the reservoir after each wheel cylinder is bled. Should the reservoir be drained during the bleeding operation, air will enter the system and rebleeding will then be necessary. When the bleeding operation is completed, the reservoir must be refilled, to within 1/2" from the top.

To prevent brake drag, it is necessary that the by-pass port (Fig. 1) be open when the brake pedal is in release position. See "Pedal Adjustment."

It is not necessary to bleed the system when brake shoes are removed for relining or replace-



1. Wheel cylinder
2. Compression spring
3. Rubber cup
4. Piston
5. Rubber boot
6. Bleeder connection
7. Shoe return spring
8. Brake shoe
9. Brake lining
10. Flat pressure spring
11. Brake shoe support plate
12. Anchor spring
13. Flexible hose
14. Eccentric pins

Figure 5—Front Brake Assembly. ("600" Series Shown)

ment if the hydraulic system is not disturbed. To prevent wheel cylinder pistons from popping out, use a suitable clamp to retain them.

BRAKE ADJUSTMENTS
1949 "600" Series

The floating shoe type brake used in the "600" Series eliminates major brake adjustments as the shoes center themselves in the drums when the brakes are applied. Hence, the brake linings wear uniformly.

Brake drums should be approximately at room temperature when making adjustments. If brakes are adjusted when drums are hot or expanded, the shoes may drag when the drum cools and contracts.

To compensate for lining wear, "600" Series brakes are adjusted as outlined below:

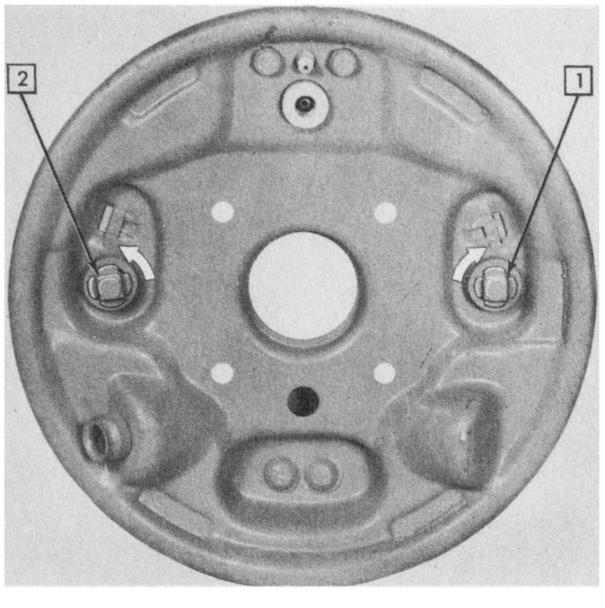
1. Support car clear of the floor in a safe manner.
2. Adjust the brake pedal play to ¼" to ½", by adjusting length of master cylinder push rod.
3. Make a hard brake application and release the pedal.
4. At each wheel, adjust the two eccentrics in the brake support plate, as follows:

   Using a ⅜" square socket wrench, turn the front shoe eccentric in the normal forward direction of wheel rotation (Fig. 6), until the entire lining surface contacts the drum.

   With ample drag, rotate the wheel slightly in both directions, centering the shoe.

Back off the eccentric until the drum is just free without touching.

Repeat the procedure with the rear shoe eccentric, turning it in the opposite direction.



1. Clockwise, viewed from back
2. Counter-clockwise, viewed from back

Figure 6—Eccentrics for Brake Shoe Adjustment.

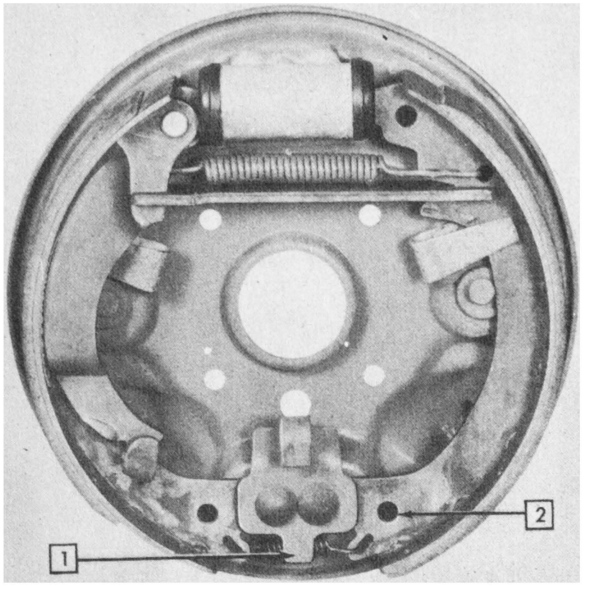
5. Adjust the hand brake cable by placing the hand brake lever one notch to the rear. Adjust the cable length at the center equalizer to remove all slack from the cable. With the hand brake lever in the fully released position, recheck rear wheels for brake drag.

Anchor Lip Adjustment

The short lower coil spring underneath the anchor lip must retain the brake shoes in constant contact with the brake support plate with sufficient tension to prevent side movement of the brake shoes (Fig. 7). This is accomplished by bending the anchor lip slightly toward the brake support plate so that 15 lbs. pressure is exerted by the coil spring to retain the shoes on the ledges of the support plate. This can be measured with a spring scale hooked to the end of the shoe. Note the pressure needed to pull the shoe outward from the support plate.

BRAKE ADJUSTMENTS
1949 "Ambassador 6" Series

The "Ambassador 6" Series brake is of the Bendix Servo type, requiring both major and minor adjustments.



1. Bend here toward support plate.
2. Attach spring scale here and read pressure. It should be 15 pounds.

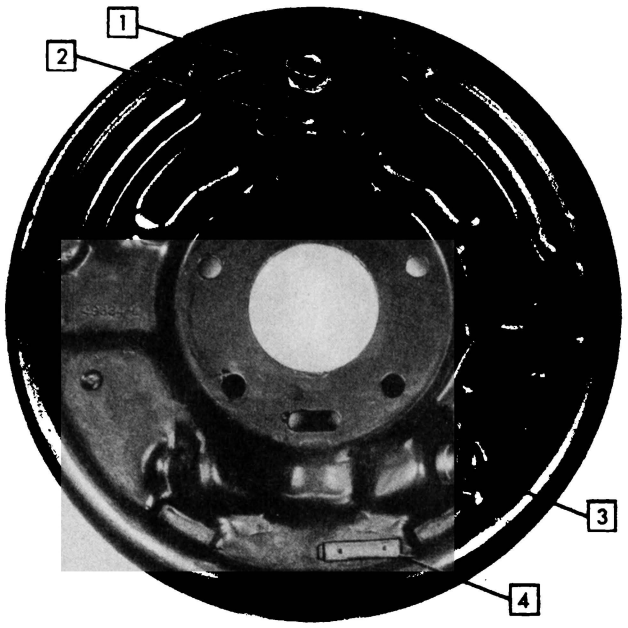
Figure 7—Anchor Lip Adjustment. ("600" Series)

Minor brake adjustment for this Series should be made in the following prescribed steps:

1. Support the car clear of the floor in a safe manner.
2. Take up end play in front wheel bearings.
3. Make sure the parking brake lever is released and proper cable slack is present.
4. Adjust pedal play ¼" to ½".
5. Check tightness of anchor bolts.
6. Remove adjusting screw dust cover (Fig. 8) from back of support plate. Spread the brake shoes by rotating the star-wheel until the drums can just be turned by hand. Then back off the adjusting screw approximately 14 notches. Do this on all four wheels. If the drums do not turn freely, reset the anchor bolts as outlined under "Major Adjustment."
7. Reinstall adjusting hole covers in the support plates and lower the car to the floor for road test.

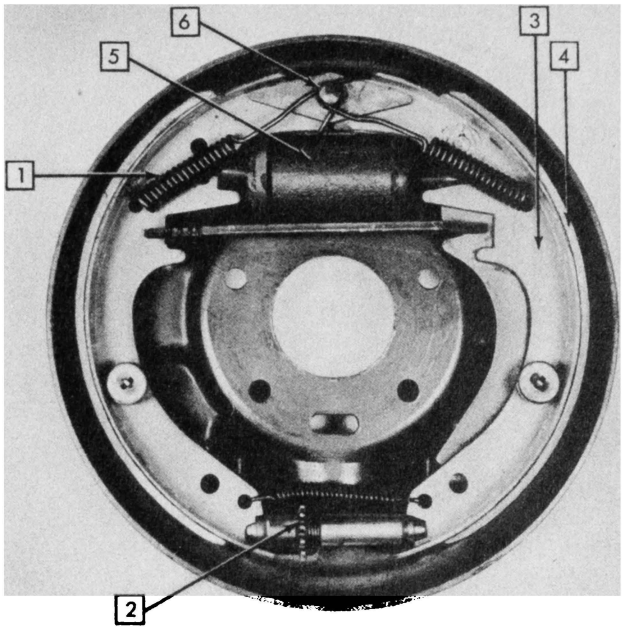
Major adjustment of the "Ambassador 6" Series brakes is required when shoes are relined or replaced, or if minor adjustment fails to give satisfactory operation of the brake system. Follow the procedure used in minor adjustment with the addition of the anchor pin adjustment described below:

1. Insert .015" feeler gauge between the secondary



1. Anchor bolt adjustment
2. Bleeder screw
3. Parking brake cable entrance
4. Adjusting screw dust cover

Figure 8—Adjustment Locations ("Ambassador 6" Series).



1. Return springs
2. Star-wheel shoe spreader (minor adjustment)
3. Brake shoe
4. Brake shoe linings
5. Wheel cylinder
6. Anchor bolt (major adjustment)

Figure 9—Brake Assembly ("Ambassador 6" Series).

shoe lining and the drum, and check clearance at each end of the secondary shoe. A clearance of .015" at each end of the secondary shoe with the primary shoe against the opposite side of the drum indicates good anchor and adjusting screw positioning. If a .015" clearance at both ends of the secondary shoe cannot be obtained by rotating the adjusting screw, the anchor pin must be adjusted.

2. To adjust the anchor pin (bolt), loosen the lock nut (Fig. 8), turn the adjusting screw (Fig. 9) until the shoes are against the drum and tap the lock nut with a hammer upward toward the brake drum until the brake drum drags. Back off the adjusting screw several notches and insert feeler gauge (.015") to get the necessary clearance *all around*. Tighten the lock nut and again check both shoes for .015" clearance to be certain the anchor pin has not moved.

Brake Pedal Adjustment

There should be ¼" to ½" free movement of the brake pedal before master cylinder piston travel begins. Without this, there is danger of the compensating port being covered, destroying the compensating feature of the system and also causing the brakes to drag.

The brake pedal adjustment is accomplished by means of the threads and lock nuts on the master cylinder piston connecting link (Fig. 2).

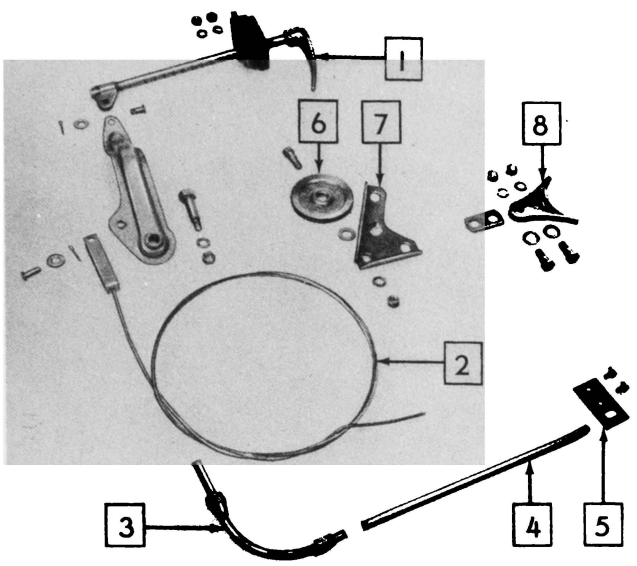
PARKING BRAKE
1949 "600" and "Ambassador 6" Series

The parking brake applies the shoes in the rear wheel brakes by means of cables connected between the hand lever and the rear brake support plates. It is most easily applied by depressing the foot brake pedal to its full travel and simultaneously pulling on the hand brake. A ratchet holds it in place. To release the parking brake, apply brake pedal pressure, turn the parking brake handle counter-clockwise 90° and push it in to the "off" position.

PARKING BRAKE ADJUSTMENT
1949 "600" and "Ambassador 6" Series

The parking brake should be adjusted in the following manner:

1. Pull the parking brake handle on one notch.



1. Hand brake lever and ratchet assembly
2. Hand brake cable, lever to adjusting yoke
3. Upper cable tube
4. Lower cable tube
5. Lower cable tube bracket
6. Cable pulley
7. Pulley bracket
8. Rear brake cable equalizer

Figure 10—Parking Brake Assembly.

2. Remove all slack from the cables at the cable adjustment equalizer.
3. Release the parking brake handle to the full "off" position, and check the rear wheels for freedom of rotation.

WHEELS AND TIRES

Series	"600"	"Ambassador 6"
Wheel Size	15"	15"
Tire Size Standard	6.40 x 15"	7.10 x 15"
Tire Pressure Front and Rear Wheels	24 lbs.	24 lbs.

Recommended pressure for normal service is 24 lbs. for both the "600" and the "Ambassador 6" sizes. Over-inflation normally causes rapid localized tire wear and reduces the tire ability to stand up under road shock. However, pressure up to 28 lbs. may be used to improve car performance, with a sacrifice of riding qualities and shock resistance on rough roads.

ROTATION OF TIRES
1949 "600" and "Ambassador 6" Series

To equalize tire wear, it is recommended that the tires be interchanged after two or three thousand miles of service. Follow the rotation procedure as illustrated in Figure 11.

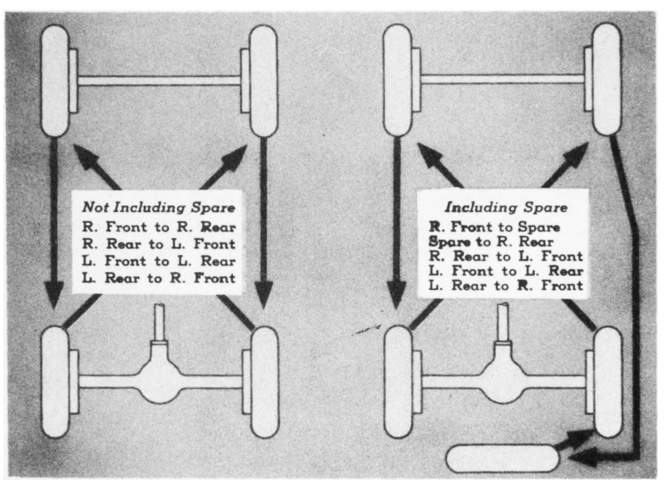


Figure 11—Tire Rotation

WHEEL BALANCE
1949 "600" and "Ambassador 6" Series

Tire and wheel balance is very important, both for preventing excessive tire wear and for ease in handling the car.

There are four factors involved in wheel balance, and each one must be considered.

Lateral Run-Out is the side movement of the wheel, caused by a bent hub or wheel (Fig. 12).

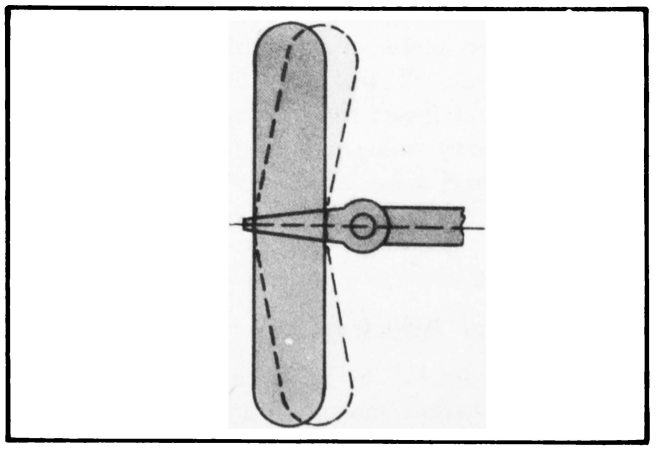


Figure 12—Lateral Run-Out.

Radial Run-Out is the unevenness of tread caused by an eccentric wheel or tire (Fig. 13).

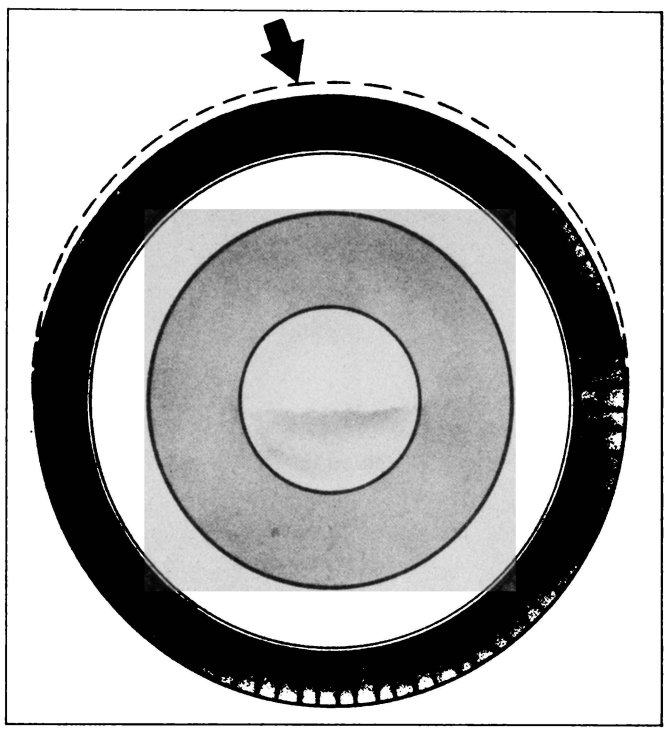


Figure 13—Radial Run-Out.

Static Unbalance is an unequal distribution of weight around the center of rotation (Fig. 14).

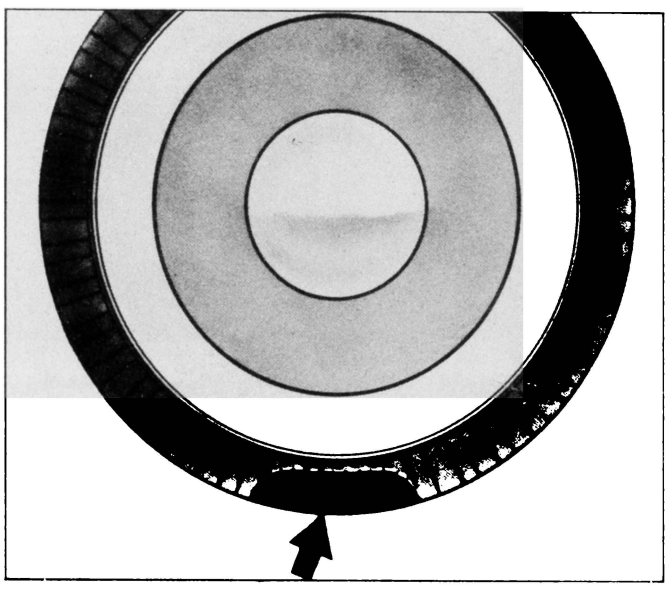


Figure 14—Static Unbalance—When Wheel Weight is Not Evenly Distributed Around the Hub as a Center, the Heavy Point Goes to the Bottom.

Dynamic Unbalance is an unequal distribution of weight around the vertical center line of the wheel (Fig. 15).

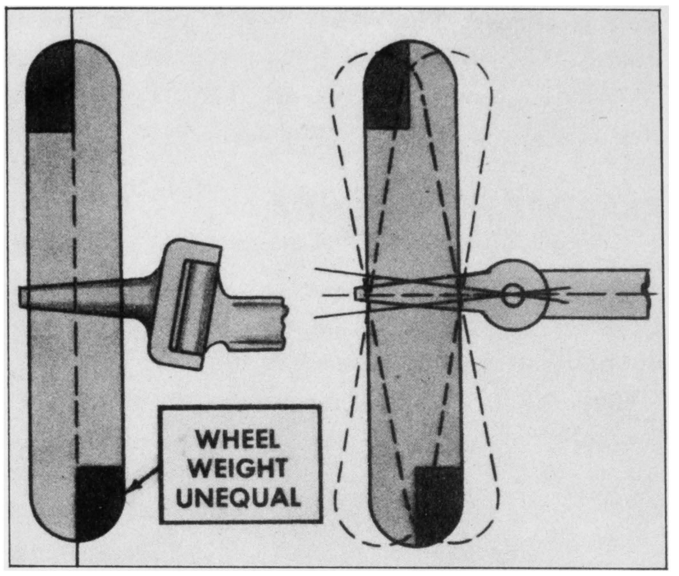


Figure 15—Dynamic Unbalance—When Wheel Weight is not Evenly Distributed around the plane of Rotation, High Speeds Result in Wheel Wobble.

FRONT WHEEL BEARINGS

1949 "600" and "Ambassador 6" Series

The front wheel bearings are of the taper roller bearing type. The front wheel bearing assembly consists of the inner and outer roller bearings, their cups and a grease seal (Fig. 16).

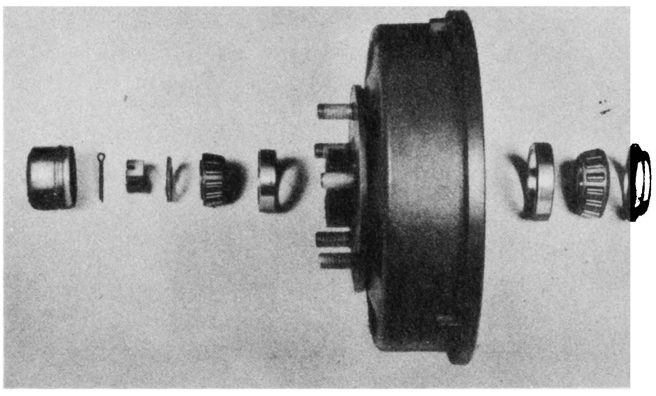


Figure 16—Front Wheel Bearing Assembly. ("600" Series Shown).

Before adjusting the front wheel bearings, clean and inspect all parts. Replace any questionable parts. Clean the brake support plate of all lubricant.

Pack the bearings with a good recommended bearing grease, then mount the wheel on the wheel spindle. To adjust the wheel bearings rotate the wheel while tightening the wheel spindle nut. Tighten the nut until it is firmly seated and will cause a drag on the wheel. Back off on the adjusting nut to the first castellation or until the cotter pin

hole is aligned. The wheel should now be free to rotate, but without play in the hub and bearings.

Install a new cotter pin and lock it to the nut and spindle. Install the inner and outer hub caps.

REAR WHEEL BEARINGS

1949 "600" and "Ambassador 6" Series

The rear wheel hub centers are tapered to fit the taper on the end of the axle shaft. The keyway in the hub matches the keyway in the shaft.

Like the front wheel bearings, the rear wheel bearings have no provision for lubrication after assembly. Therefore, these bearings should be packed with a good quality wheel bearing lubricant before assembly.

Removing Rear Wheel Bearings

1949 "600" and "Ambassador 6" Series

When pulling the rear wheel hub and drum assembly, use a suitable puller which exerts a pushing force on the axle shaft and a pulling force on the hub assembly (Fig. 17).

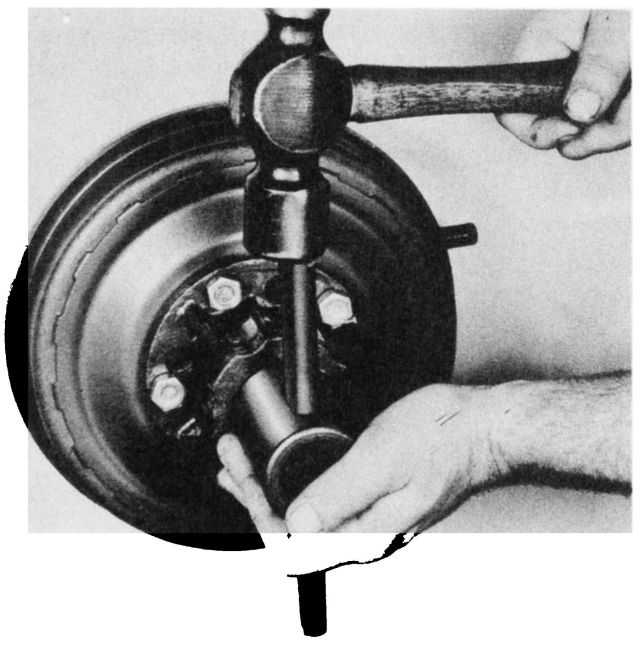


Figure 17—Rear Wheel Hub Puller (J-1644).

Remove the brake support plate assembly, taking care not to damage the shims. "Mike" the shims as you remove them so that you get the same amount of shim material back on installation (Fig. 23).

Pull the axle shaft, bearing and bearing cup. Slip the cup off the shaft (Fig. 18).

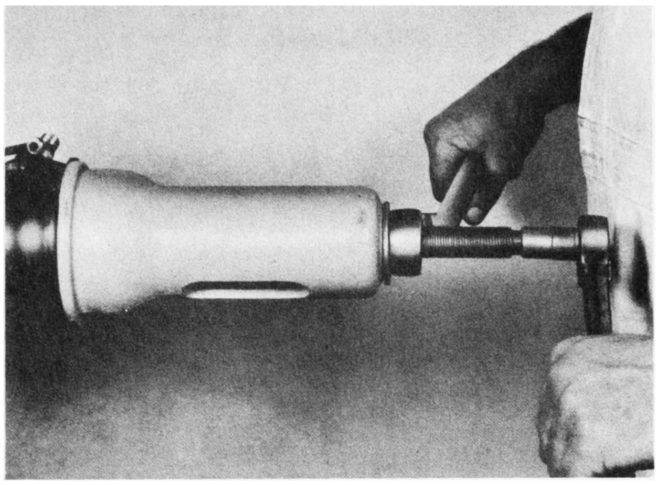


Figure 18—Removing Axle Shaft and Bearing From Axle Housing.

The bearing cone and roller assembly is a tight press fit on the axle shaft and must be removed in an arbor press (Fig. 19).

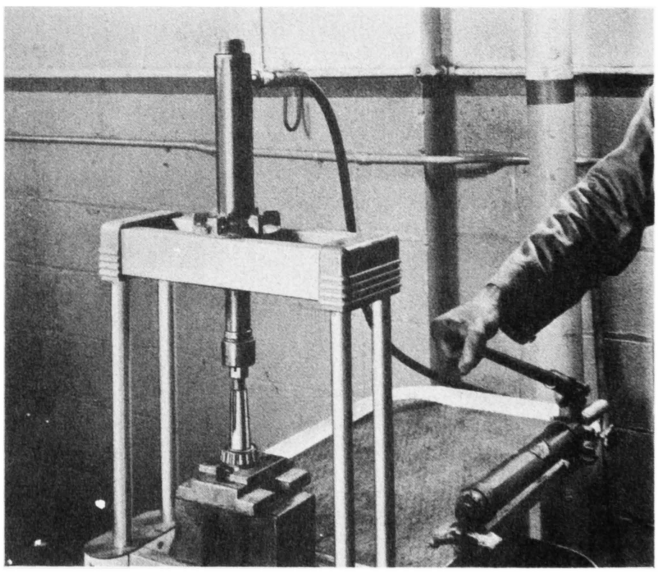


Figure 19—An Arbor Press Like This Should Be Used to Remove Wheel Bearings from Axle Shafts.

Rear Wheel Bearings—Installation

Before installing the axle shaft in the housing, always install new oil seals (Fig. 20).

After cleaning and packing wheel bearings thoroughly with quality wheel bearing lubricant, press the inner bearing back on the axle shaft.

Install the axle shaft in the housing by sliding the splined end of the shaft into the differential side gear, matching splines. Then install the bear-

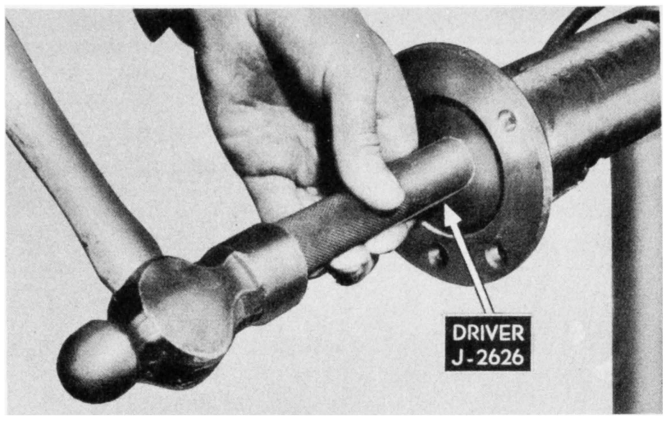


Figure 20—New Oil Seals Should Always Be Installed When Axles Are Reassembled.

ing cup and drive it into place with driving tool J-1433-1, as in Figure 21.

NOTE: *The "Ambassador 6" Series right hand axle shaft is 1½" longer than the left.*

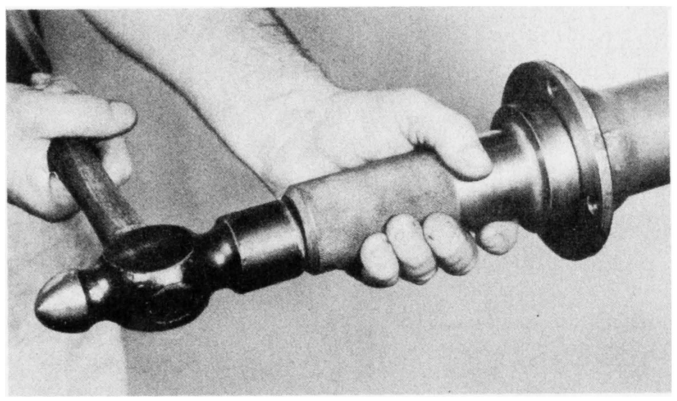


Figure 21—The Outer Axle Shaft Bearing Cup Is Driven Into Place With Tool J-1433-1.

Slide the original shims on the axle, and install the brake support plate, spacer and cover (Fig. 22). Tighten the cap screws that hold the support plate to the axle housing flange. Then strike the end of each axle shaft with a lead hammer to drive the bearing cup on the opposite side solidly in place.

CAUTION: *When installing the shims, be sure to line up the drain holes in the shims with the drain hole in the case.*

With the axle shafts and brake support plates installed and tightened, attach the axle shaft end play checking tool (J-2092) to the end of one shaft, and affix a dial indicator to the support plate

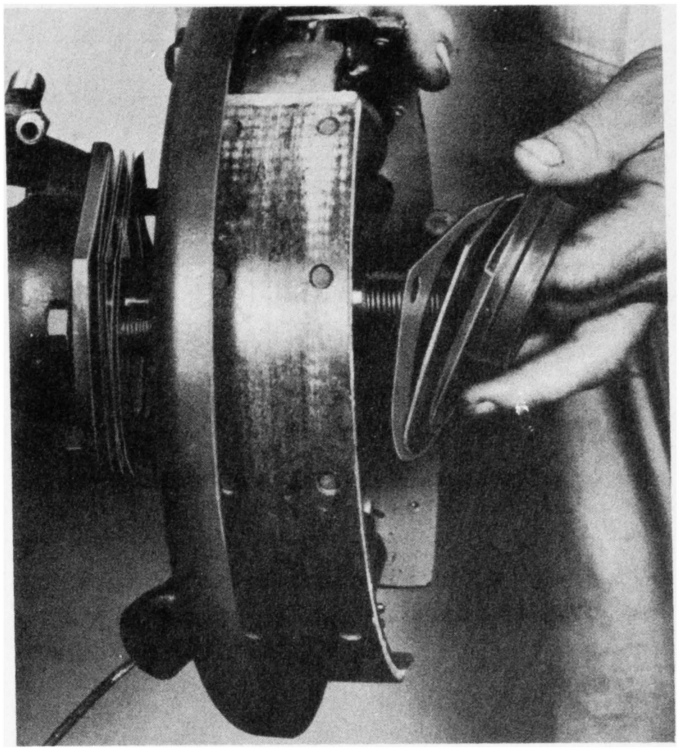


Figure 22—Installing Brake Support Plate Assembly and Outer Oil Seal (Rear). ("Ambassador 6" Series Shown).

or on the flat side of the checking tool. Now, grasp the tool in both hands, pull it in and out, and read the end play on the dial. It should read .002" to .004" (Fig. 23).

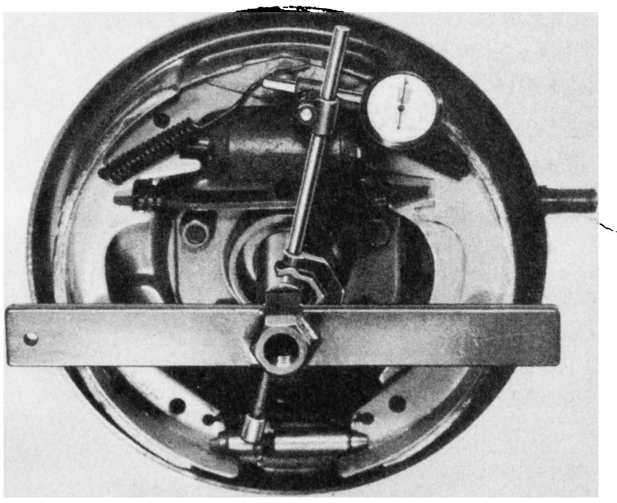


Figure 23—Adjusting Rear Wheel Bearings. ("Ambassador 6" Series Shown).

BRAKES SPECIFICATIONS

Series	"600"	"Ambassador 6"
Type of Mechanism	Lockheed Hydraulic	Lockheed Hydraulic
Make	Bendix Non-Servo Floating Shoe	Bendix Servo
Total foot braking area	132 sq. in.	176 sq. in.
Clearance, Toe, Inches		.015"
Clearance, Heel, Inches		.015"
Pedal Free Play	¼" to ½"	¼" to ½"
Drum Diameter, Inches	9"	10"

WHEEL CYLINDER BORE IN INCHES

Series	"600"	"Ambassador 6"
Wheel Cylinder	Straight Bore	Straight Bore
Front Cylinder Diameter	1"	1 1/16"
Rear Cylinder Diameter	7/8"	1"
Master Cylinder Bore, Inches	1"	1 1/8"
Piston Clearance, Wheel and Master Cylinders, Inches	.001" to .003 "	.001" to .003"

REAR AXLE and PROPELLER SHAFT SECTION



Nash

TECHNICAL SERVICE MANUAL

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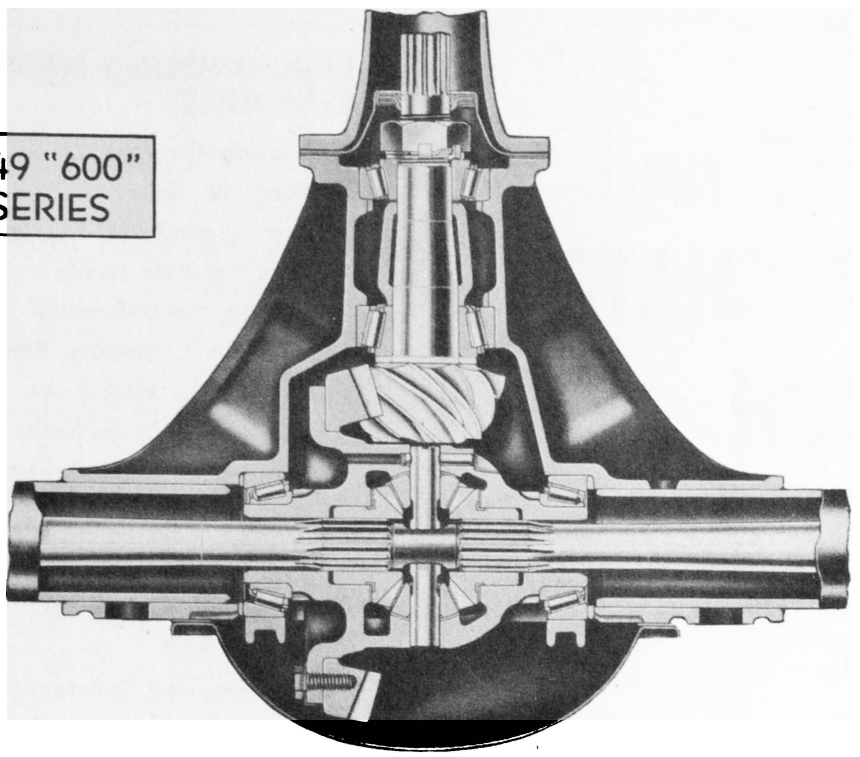
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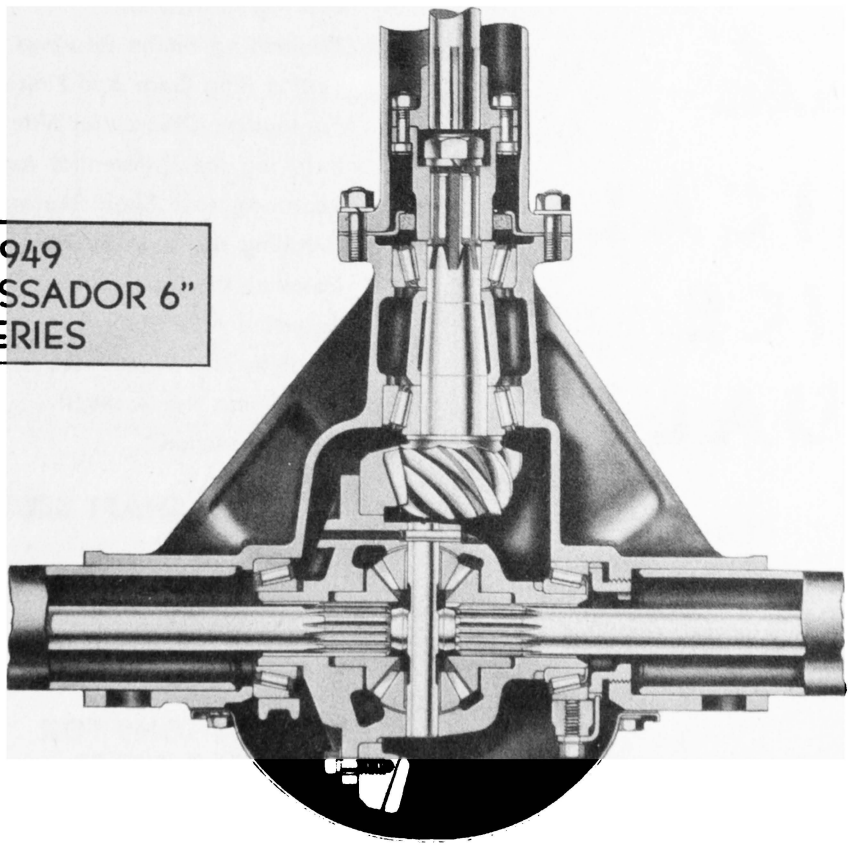
September 1, 1948

REAR AXLE AND PROPELLER SHAFT SECTION

1949 "600" SERIES



1949 "AMBASSADOR 6" SERIES



REAR AXLE and PROPELLER SHAFT SECTION

NASH TECHNICAL SERVICE MANUAL

DIAGNOSING AXLE TROUBLES

Test No. 1

With the engine warmed up and the overdrive locked in conventional gear position, drive at ten miles per hour. Listen carefully and keep driving at this speed until you are thoroughly familiar with all car noises.

Now gradually increase the speed until you reach forty-five miles an hour. As the car is gaining speed notice any changes in the running gear noises; notice the speed at which each noise comes in and goes out.

Then lift your foot from the accelerator and, without using the brakes, allow the car to slow down. Again, make a note of every change in sound and the speed at which each change takes place.

You'll probably find that every sound comes in and leaves at the same speeds on both acceleration and deceleration.

Test No. 2

Step the car up to fifty miles per hour, shift into neutral, turn off the ignition, and allow the car to coast until it comes to a stop. Listen again to all the running noises. You'll notice that at very low speeds a low pitched sound will come in. This is tire noise, not axle noise.

While making this test, note again all the changes in running noise and the speeds at which they come in and go out. Any of the noises you noted in Test No. 1 which also appear in Test No. 2 can be eliminated as axle noise because, on this test, the axle is not under load and will produce no noise other than bearing noise.

If, however, there are any noises which appeared in the first test but did not appear in the second test, they may be in the rear axle. To find out make Test No. 3.

Test No. 3

Park the car with the engine running and apply the parking brakes. Then slowly accelerate the engine, comparing again all noises with those heard in the previous tests. Any sounds still left from Test No. 1 which are heard in this test can be disregarded. They are probably muffler, air cleaner or body vibrations.

Test No. 4

Finally, raise the rear wheels off the ground, put the car in gear and run the engine. Now analyze the noises you haven't eliminated to see if they actually come from the rear axle.

NOISES TO WATCH FOR AND WHAT TO DO ABOUT THEM

Hum While Pulling

1. Inspect adjustment of bearings in axle shafts, pinion shaft or differential.
2. Inspect tooth contact between ring gear and pinion.

Hum While Coasting

1. Inspect condition of rear axle wheel bearings.
2. Inspect pinion gear depth. Pinion may need to be moved away from ring gear—or toward ring gear.

Thumping

1. Inspect for chipped gear teeth, chipped bearing races or rollers, or a piece of metal imbedded in the gears.

Excessive Backlash

This may or may not be due to the rear axle. Other causes of backlash may be:

1. A badly tuned engine.
2. A loose clutch disc.

3. Excessive play in transmission gears and shafts.
4. Loose universal joints or flanges.

If backlash proves to be in the rear axle these are the things to do:

1. Inspect for wheel hubs loose on the axle shafts.
2. Inspect for too much play between ring gear and pinion.
3. Inspect for end play in the pinion shaft, caused by bearing failure as the result of improper lubrication.

Noise on Turns

1. Inspect for spider gears that are too tight on the spider shaft.
2. Inspect for a scored spider shaft.
3. Inspect for differential side gears that are too tight in the case.
4. Inspect for chipped, scuffed or otherwise damaged differential gears.
5. Inspect for excessive wear of differential gears and thrust washers.

DISASSEMBLING NASH REAR AXLES

Removing the Axle

Drain and Flush Rear Axle

Remove the plug at the bottom of the axle housing and allow the axle lubricant to drain from the axle housing.

There are on the market axle flushing solutions that can be placed in the axle housing. These solutions will clean all of the old lubricant from the housing and the gears. Time is saved by this operation because the parts are clean when they are removed. An inspection can therefore be made quickly.

Always replace the drain plug after the axle lubricant has been removed.

Raise and support the rear end of the body. Disconnect the rear brake cable at the center equalizer. Disconnect the torque tube at the rear of the transmission. Disconnect the brake hose and the shock absorbers at the axle end, permitting them to hang from the body. Roll the axle free from the car.

Then disconnect the truss rods, torque tube, and propeller shaft from the axle (Fig. 2).

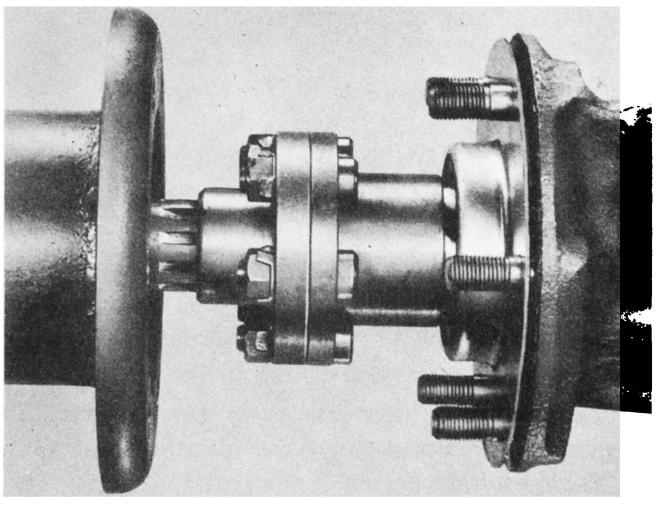


Figure 2—Disconnect Torque Tube and Propeller Shaft from Rear Axle. "Ambassador 6" Series.

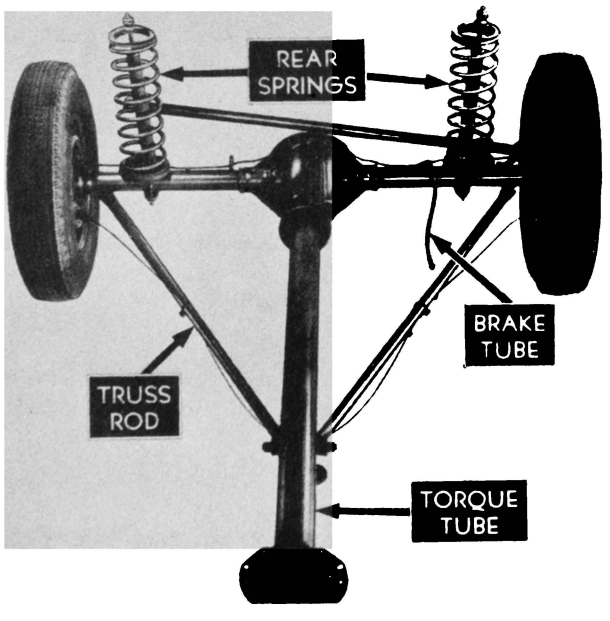


Figure 1—"Ambassador 6" Series Rear Axle.

Setting Up the Axle

When the axle is completely disconnected, set it up in an axle stand where it can be fastened securely and be worked on from all sides (Fig. 3).



Figure 3—To Simplify Your Work, Set Up the Axle in an Axle Stand.

Pulling the Hubs

First, remove the cotter keys and the rear axle nuts. Then attach the rear wheel hub puller (J-1644) as shown (Fig. 4), and pull the wheel hubs and drums.

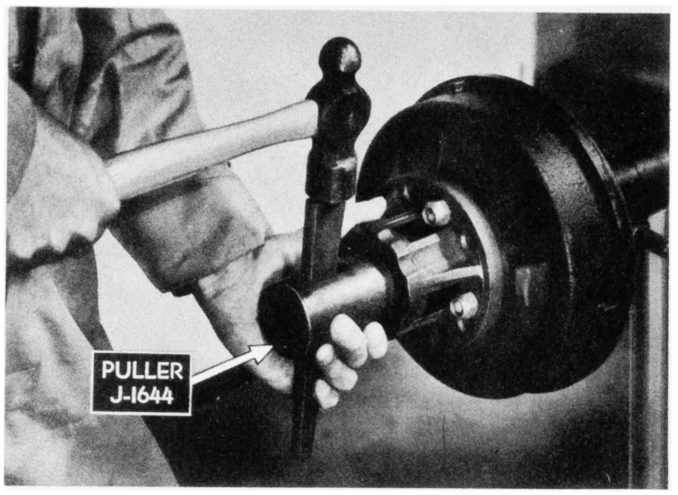


Figure 4—This Puller Removes Rear Wheel Hubs Easily and Without Danger of Damaging Internal Axle Parts.

When pulling hubs, never use a knock-out on the end of the axle shaft. It may damage the wheel bearings or thrust block.

Removing the Brake Backing Plates

Remove the cap screws that hold the brake support plate to the housing. Then slide the oil seal, backing plate and shims off the axle (Fig. 5).

Treat the shims with special care.
"Mike" them as you remove them so that you can put the same amount back in when you reassemble the axle.

Next inspect the backing plate to see if the cap screw holes have been elongated by loose holding bolts.

Discard the oil seals. As a general rule, new oil seals should always be installed when assembling.

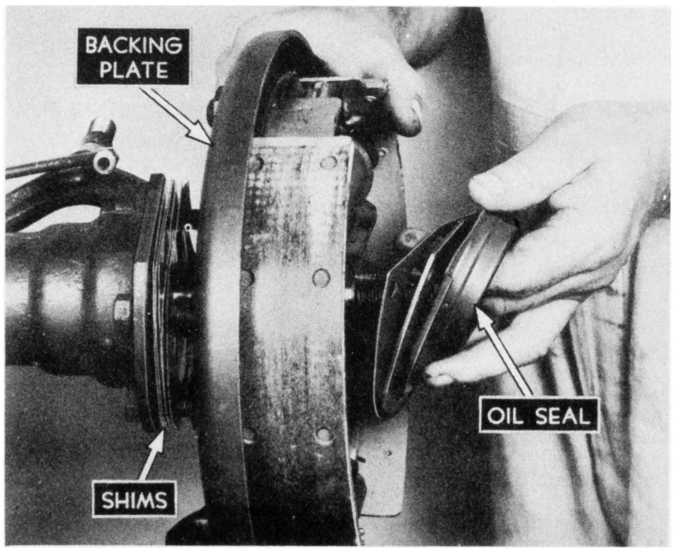


Figure 5—Removing the Brake Backing Plate and Shims Between the Backing Plate and the Axle Housing—"Ambassador 6" Series.

Pulling the Axle Shafts

Attach the special axle shaft puller (J-2498) to the axle as shown (Fig. 6), and pull out the axle shaft and bearing. Then slip the bearing cup off the shaft.

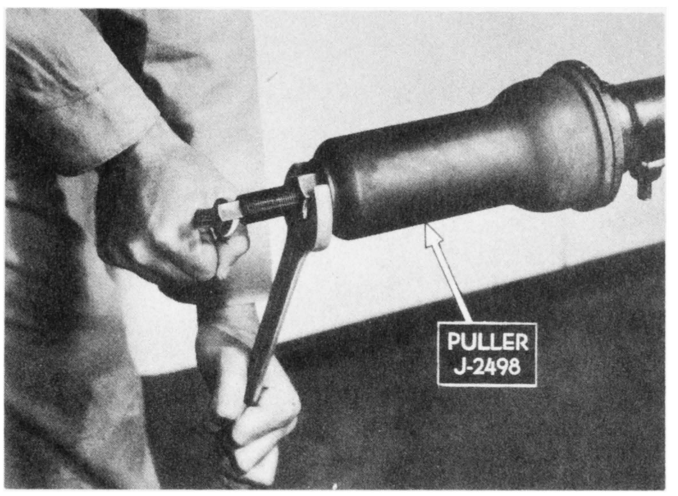


Figure 6—A Special Puller is Used to Remove the Axle Shafts from the Axle Housing.

The bearing cone and roller assembly is a tight press fit on the axle shaft and must be removed in an arbor press (Fig. 7).

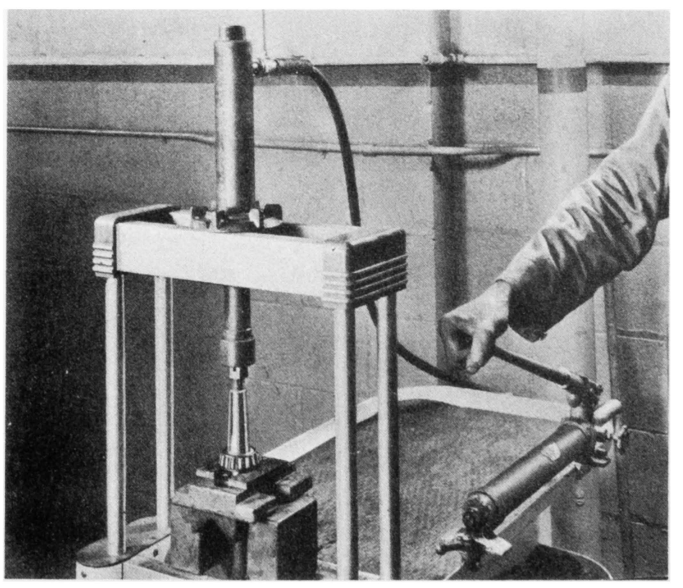


Figure 7—An Arbor Press Like This Should be Used to Remove Wheel Bearings from Axle Shafts.

Inspecting the Axle Housing

A bent axle or housing may put an excessive strain on axle parts and make the whole axle noisy. It is therefore important to inspect the axle housing for straightness.

To do this, place two straight-edges across the flanges of the housing and measure the distances between their ends (Fig. 8). If the straight-edges are parallel within limits of 1/16″ to 3/32″ at a distance of 11″ from the tube center, the housing is serviceable. Be sure and make this inspection two ways—horizontally and vertically, to test for a sagged housing.

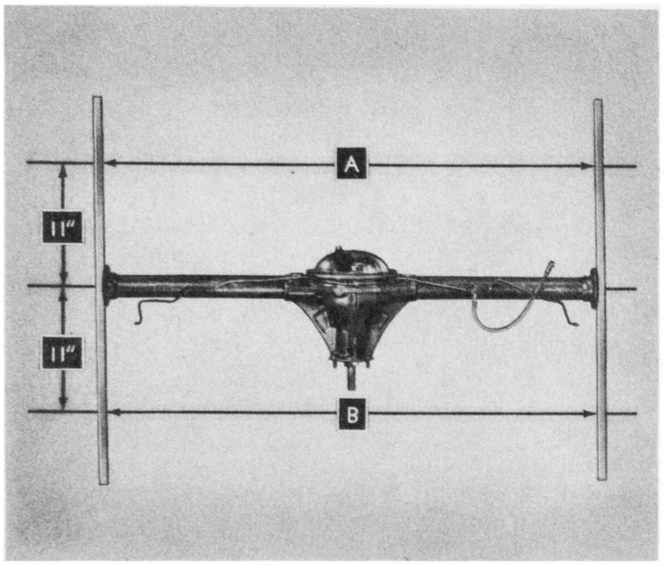


Figure 8—The Setup for Checking the Axle Housing. Dimensions "A" and "B" Should be Equal Within 1/16″ to 3/32″.

Removing the Differential

Remove the differential cover bolts. As you do this, notice the ratio tag which is held on by one of these bolts. Save this tag and be sure to put it back when you reassemble the axle.

Before removing the differential from the housing, mark the bearing caps with a center punch so they can be put back in exactly the same positions (Fig. 9).

1949 "600" Series

First take out the bearing cap screws and remove the bearing caps.

Because the differential assembly is wedged or "loaded" into the housing by shims placed at either side bearing, it is necessary to pry the assembly out

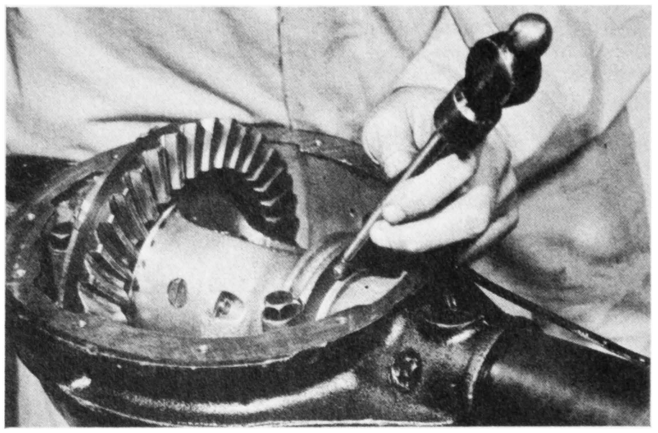


Figure 9—Marking the Bearing Caps before Removing the Differential.

of the case (Fig. 10). Stick two bars into the case, as shown, and lift the assembly out by prying against the housing.

As the differential comes out of the housing, be careful not to damage the bearing cups, rollers and shims.

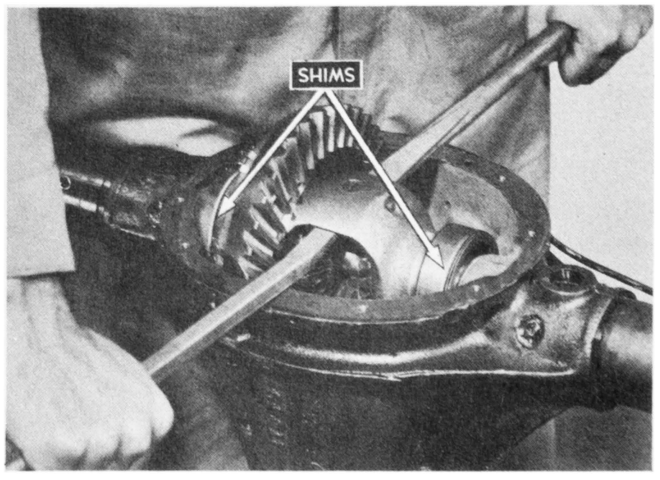


Figure 10—On the "600" Series it's Necessary to Pry the Differential Out of the Axle Housing.

When the assembly is out of the housing, tie the shims to the bearing cap and cup so they won't be misplaced.

1949 "Ambassador 6" Series

On these series, the differential assembly is "loaded" into the housing by shims at the left side bearing and an adjusting nut at the right.

To remove the assembly, remove the adjusting nut lock. Take off the bearing caps. Then loosen the adjusting nut until the differential can be lifted from the housing (Fig. 11).

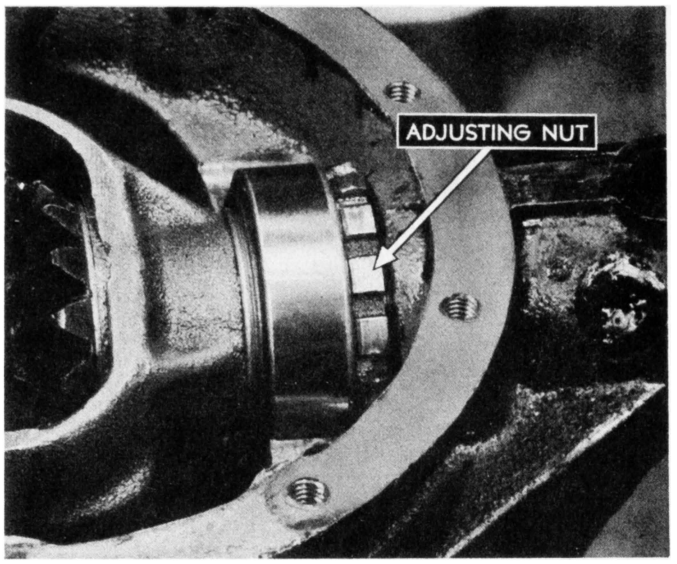


Figure 11—This Adjusting Nut "Loads" the Side Bearings on the "Ambassador 6" Series. It Must be Loosened Before the Assembly can be Removed.

Pulling the Differential Side Bearings

A special puller (J-2497) is used to take the side bearing cones off the differentials of both "600" and "Ambassador 6" Series (Fig. 12). When using this tool, be sure it pulls on the bearing so that the rollers are free. If the puller bears on the roller cage it may damage the bearing.

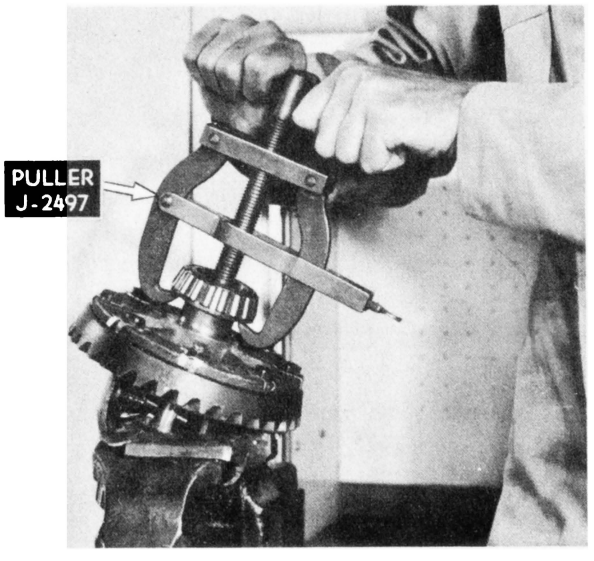


Figure 12—Pulling Differential Side Bearing with Puller J-2497.

On the "Ambassador 6" Series you will notice that there are shims between the bearing and the case on the left side. When using the puller be careful not to damage these shims. If they are damaged, replace them with new shims of the same thickness.

Removing the Ring Gear

Take out the eight cap screws that hold the ring gear to the differential case. (It's a good idea to mark the ring gear and case so they can be reassembled in the same position.) Then take a brass drift and tap the gear off the case, being careful not to nick the face plate or drop the gear (Fig. 13).

CAUTION: *Do not use a chisel to wedge the ring gear from the case.*

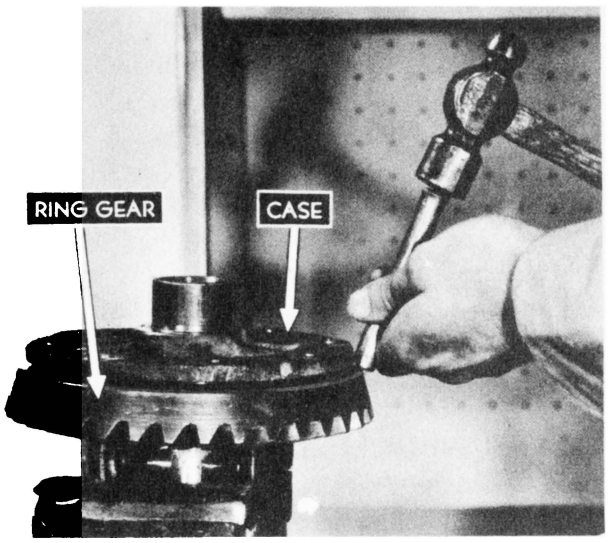


Figure 13—The Ring Gear Should be Tapped Off the Differential Case with a Brass Drift.

Removing the Spider Gear and Shaft

Take a long taper or drift and drive out the lockpin that holds the spider shaft in place (Fig. 14).

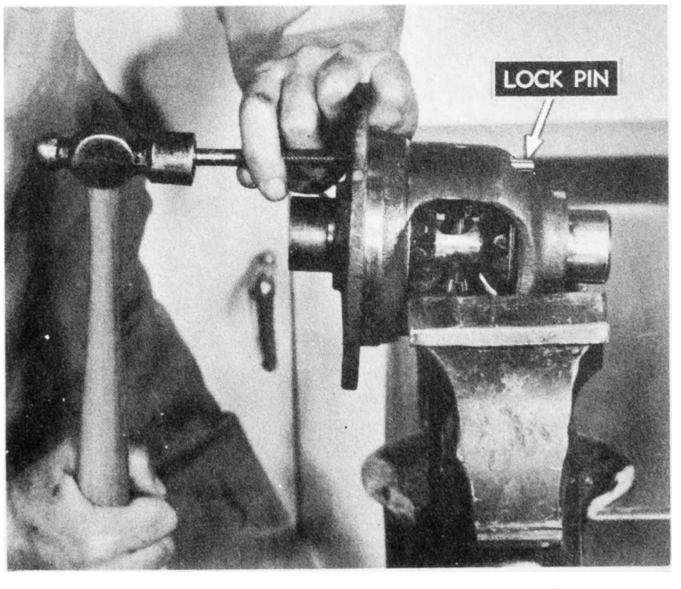


Figure 14—The Spider Gear Lockpin Must be Driven Out Before the Spider Gears and Shaft can be Removed.

Then the spider shaft can be driven out and the thrust block can be dropped out through the differential side gear (Fig. 15). Roll the spider gears around on the side gears until they can be lifted out through the holes in the case. Then lift the side gears and their thrust washers out (Fig. 16).

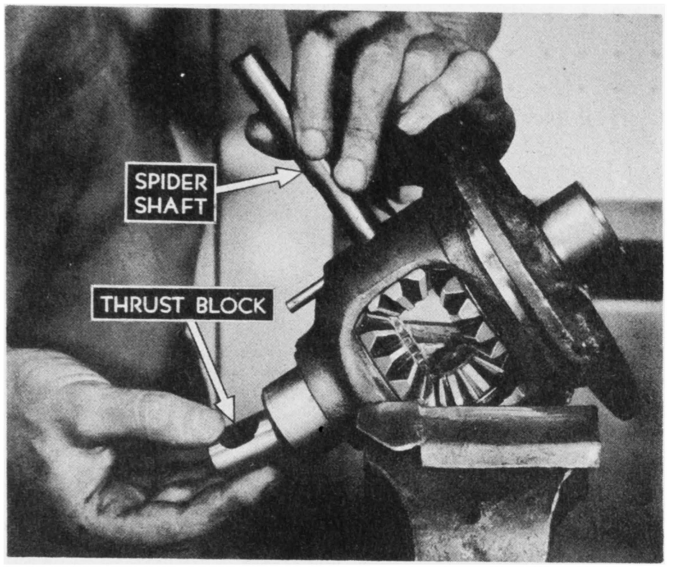


Figure 15—When the Spider Shaft and Thrust Block have been Removed . . .

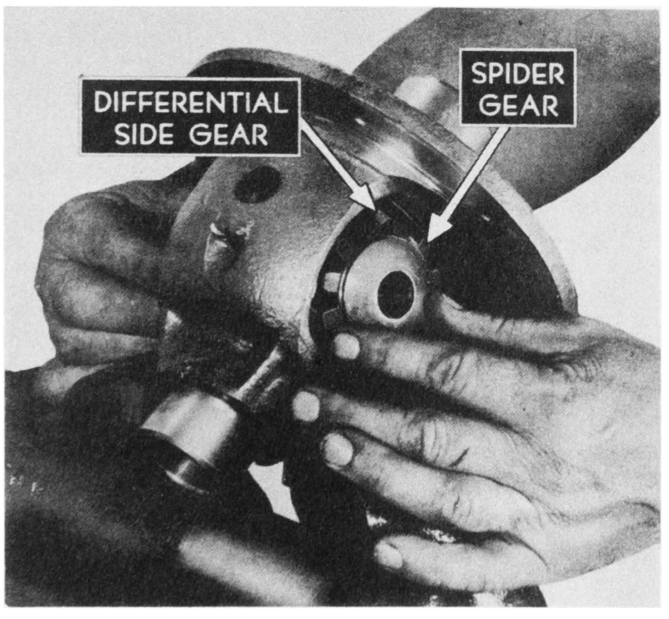


Figure 16— . . . the Spider and Side Gears can be Lifted Out.

Inspecting Differential Parts

The Spider Gear Shaft

Whenever one rear wheel is stuck and the other is spinning, the spider shaft is subjected to excessive strain. Inspect this shaft for scoring or other signs of wear.

Thrust Block

Examine the thrust block to see that it has not been crushed or broken. A thrust block that has been damaged or distorted will affect the end play of the axle shafts. If used in this condition, excessive end play of the axle shaft will result.

The Spider Gears

Examine the teeth of these gears for excessive wear or chipping. Fit a new spider gear shaft into the gear to see if the hole is out of round or worn. Discard the thrust washers. New ones will be used during assembly.

The Differential Side Gears

Examine these gears for worn, cracked or chipped teeth. Fit the gear onto the axle spline to see if it fits tightly. If there is any play, try the gear on a new axle shaft to determine whether the wear is in the gear or the shaft. This play must be corrected or it will cause excessive backlash in the drive line. If the gears need replacement, spider and side gears should be replaced as a set.

The Differential Case

Examine the bearing surfaces in the differential case to be sure they are not scored or grooved.

The Ring Gear

Inspect all the teeth of this gear for wear, cracking or chipping. Then examine the tooth contact pattern to see if the gear has been meshing correctly with the pinion gear.

If the tooth pattern indicates that the ring and pinion have not been meshing correctly, both gears should be replaced because it is impossible to adjust worn gears for quiet operation.

Whenever you must replace either the ring gear or the pinion gear, always replace both gears. These gears are run in and lapped together at the factory as matched sets.

Removing the Pinion Gear and Shaft 1949 "600" Series

Remove the oil seal, bend back the lip of the pinion nut lock and remove the pinion nut. This can be done by holding the pinion shaft with the pinion holding tool and spacer (J-2496), then breaking the nut loose with a wrench.

1949 "Ambassador 6" Series

Remove the pinion shaft nut using the pinion shaft nut socket tool (J-1411), while holding the pinion shaft flange.

Now remove the companion flange. As this is a press fit, use flange puller J-2984. DO NOT DRIVE THE FLANGE OFF THE SHAFT. The oil seal can now be removed.

Both Series

Now tap the end of the pinion shaft lightly with a fiber hammer to free the front bearing cone from the cup. Then remove the bearing (Fig. 17). Between the bearing and the bearing spacer there are a number of shims. Be sure to tie them to the bearing.

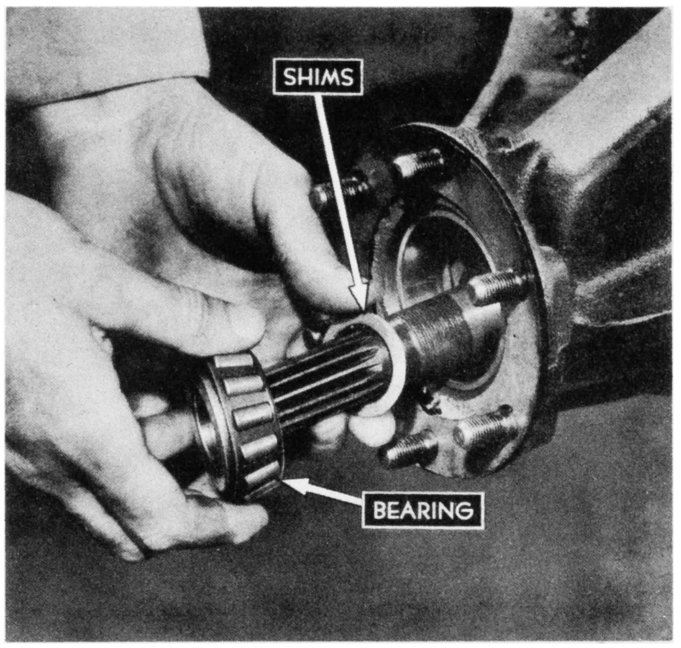


Figure 17—Before Removing the Pinion Shaft, Remove the Front Bearing and Shims. "600" Series Shown.

Then remove the pinion gear, bearing and spacer as a unit from the rear of the housing.

Pinion Bearing Cups

There is a recess behind each pinion bearing cup that will allow it to be driven from the case. Use a long punch to drive the cups from the case. To keep from damaging the cups as they are removed, drive them out first on one side then on the other, keeping them square in the bores.

Pulling the Pinion Bearing and Adjusting Washer

The pinion bearing is a press fit on the pinion shaft. To remove it, attach the pinion bearing puller (J-2244 for the "600" Series — J-2245 for the "Ambassador 6" Series), and remove it using a press (Fig. 18). Then remove the pinion bearing adjusting washer which is between the bearing and the gear and which regulates the depth of the pinion in the housing. Fasten the adjusting washer to the bearing for assembly.

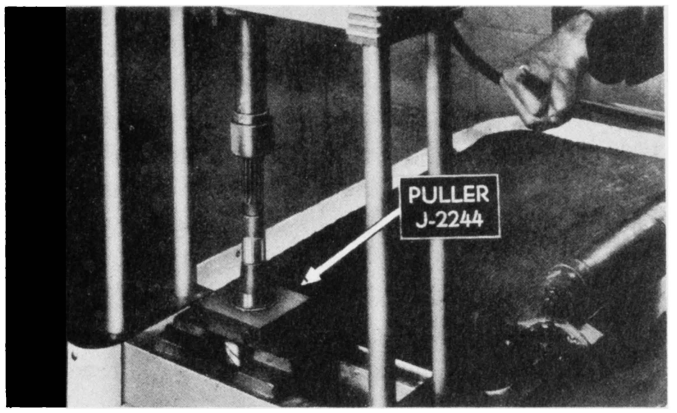


Figure 18—Special Pullers are used to take Pinion Bearings Off Pinion Shafts.

Inspecting the Pinion Gear and Shaft Assembly

Pinion and Ring Gears

Inspect the pinion and ring gears to be sure they're matched sets. On the rear face of the pinion gear and the edge of the ring gear there are marks or numbers (Fig. 19). The first marking should be the same on both gears. New gears out of stock should be inspected the same way. Then inspect

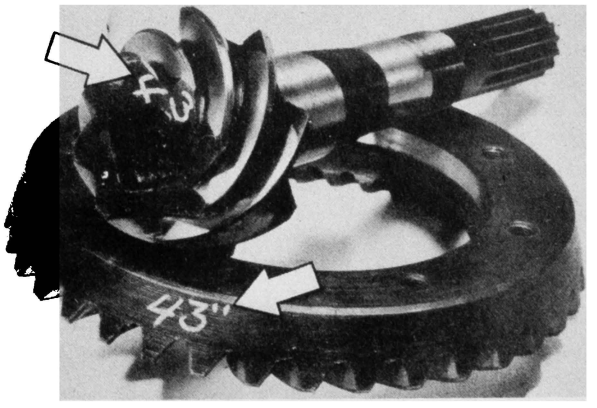


Figure 19—Markings on Ring and Pinion Gears Indicate that They are a Perfect Matched Set. These Gears Must Always be Replaced as a Set.

the pinion gear for worn, chipped or cracked teeth (remembering that if either the pinion or the ring gear needs replacement, both gears must be replaced as a set).

Pinion Bearings

Inspect both pinion bearings — cones, cups and rollers — for excessive wear, overheating or scoring. Replace them if necessary.

Cleaning Parts

Before starting to reassemble the axle all parts should be thoroughly washed and cleaned with an approved cleaning solution. However, do not lubricate any bearings until after the axle has been assembled and all adjustments have been made. The specifications for these axles have been set up on the basis of dry parts, and lubrication will make your adjustments inaccurate. If you are not going to reassemble the parts immediately, be sure to cover them as protection against dust after you've cleaned them.

ASSEMBLING THE REAR AXLES

Assembling the Differential

Side Gears

Using new thrust washers behind the side gears, the side with the oil pockets toward the gear, install the gears in the ends of the differential case. Assemble the gears according to the marks you made when disassembling the unit. Lubricate the thrust surfaces with heavy engine oil, and rotate the gears to be sure they turn without any binding.

Thrust Washers

The thrust washers used are pitted on one side to pocket lubricant. This side of the washer goes toward the gear as it is installed.

Spider Gears

Install new thrust washers behind the spider gears and mesh them with the side gears so that they are directly opposite each other in the case (Fig. 20). Then roll the gear assembly around in the case until the holes in the spider gear line up with the holes in the case for the spider shaft.

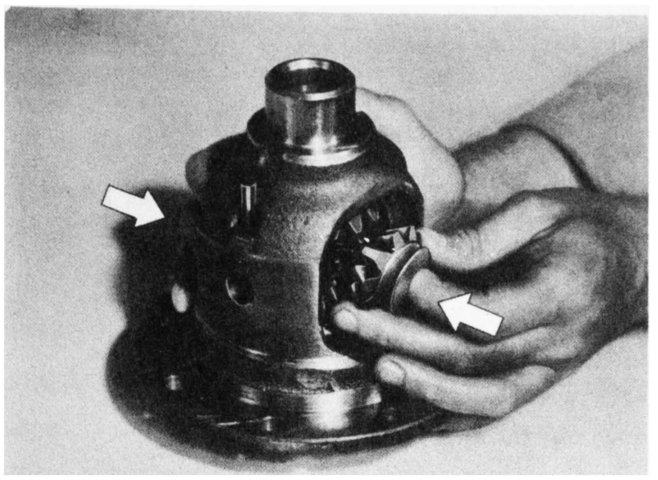


Figure 20—With the Side Gears in Place, the Spider Gears are Installed Exactly Opposite Each Other.

Spider Gear Shaft

Fit the spider gear shaft in so that the lock pin hole in the shaft lines up with the hole in the case. Then drive the lock pin into place.

Replacing the Differential Side Bearings 1949 "600" Series

Be sure the bearing surfaces are clean. Then with tool J-2100 press the bearings onto the case. Be sure the bearings are pressed all the way on, tight against the shoulder of the case.

1949 "Ambassador 6" Series

Using the bearing replacing tool (J-2104) press the side bearings onto the case just as above (Fig. 21). In this case, however, be sure the same number of shims are replaced behind the left bearing as were there when you disassembled the unit. Place the thickest shim against the case. On the right side there are no shims. Press bearing tight up against the shoulder of the case.

Adjusting the Side Bearings

Place the bearing cup over each side bearing. Rotate the bearing to seat the rollers in the cups. Then place the entire assembly in the axle housing.

1949 "600" Series

On each side, between the bearing and the case, install a .075" shim (Fig. 22). Then test the assembly for end play. If there is any end play,

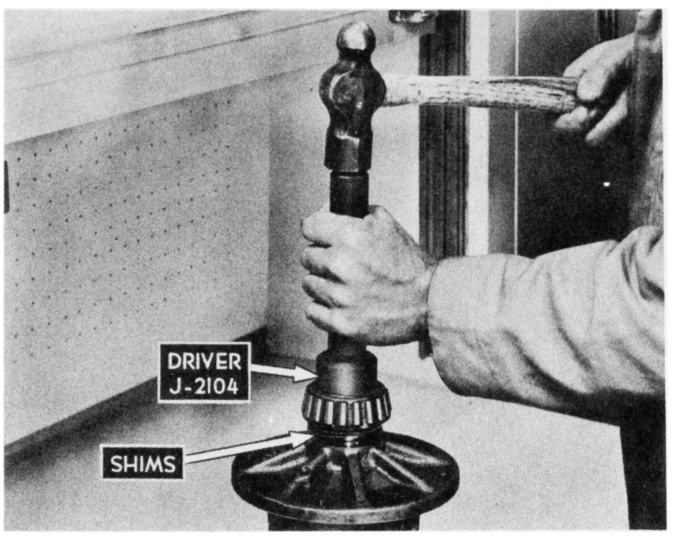


Figure 21—Use Driver J-2104 to Replace Differential Side Bearings on "Ambassador 6" Series. Shims are Installed Behind Left Bearing Only.

remove the shims and use the next thickness, being sure to use the same thickness on each side. These shims are graduated in units of .005".



Figure 22—End Play and Ring Gear Adjustment on the "600" Series are Controlled by Shims Placed at Each Side Bearing.

Both Series

When end play has been eliminated, place the bearing caps in position and tighten the cap screws with a torque wrench (55-60 foot-pounds on "600" Series — 110 foot-pounds on "Ambassador 6" Series).

Now rotate the differential assembly to see that there is no end play or binding.

Next, with the assembly still in place, attach a dial indicator to the housing with the button on the ring gear face of the differential case. Rotate the assembly and test the ring gear face for runout. The runout should not be over .002".

Remove the case from the housing, being careful to retain the shims you have put into each side bearing to remove end play.

Installing the Ring Gear

With the differential out of the housing, place the ring gear over the shoulder of the differential case. If you're using the same gear you removed, be sure you put it back in the same position according to your marks. Finally, bolt the ring gear to the face with cap screws and new locks. Two of the screws inserted in opposite holes may be used as guides to pull the gear into position.

Tighten the cap screws with a torque wrench as follows:

"600" Series — 45-50 foot-pounds;

"Ambassador 6" Series — 60-65 foot-pounds.

Installing the Pinion Gear and Shaft

Bearing Cups

If the bearing cups were removed during disassembly, drive them back into place with a pinion bearing cup replacing tool (Figs. 23 and 24).

For the front bearing, use tools J-2532 on the "600" Series and J-2531 on the "Ambassador 6" Series. For the rear bearing, use J-2534 on the "600" Series and J-2533 on the "Ambassador 6" Series.

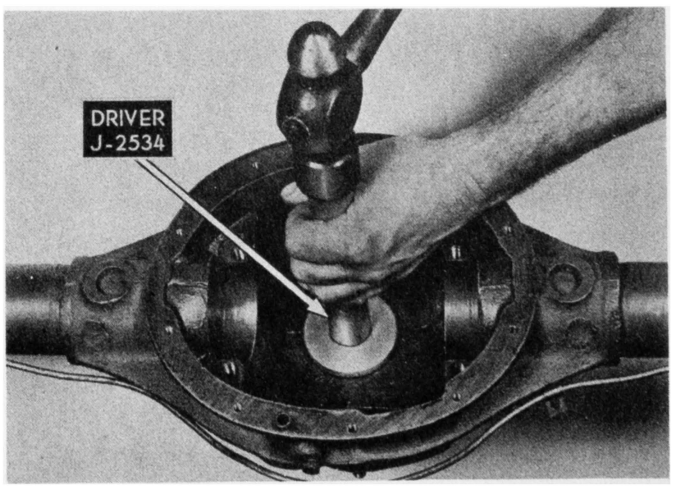


Figure 23—Installing Rear Pinion Bearing Cup.

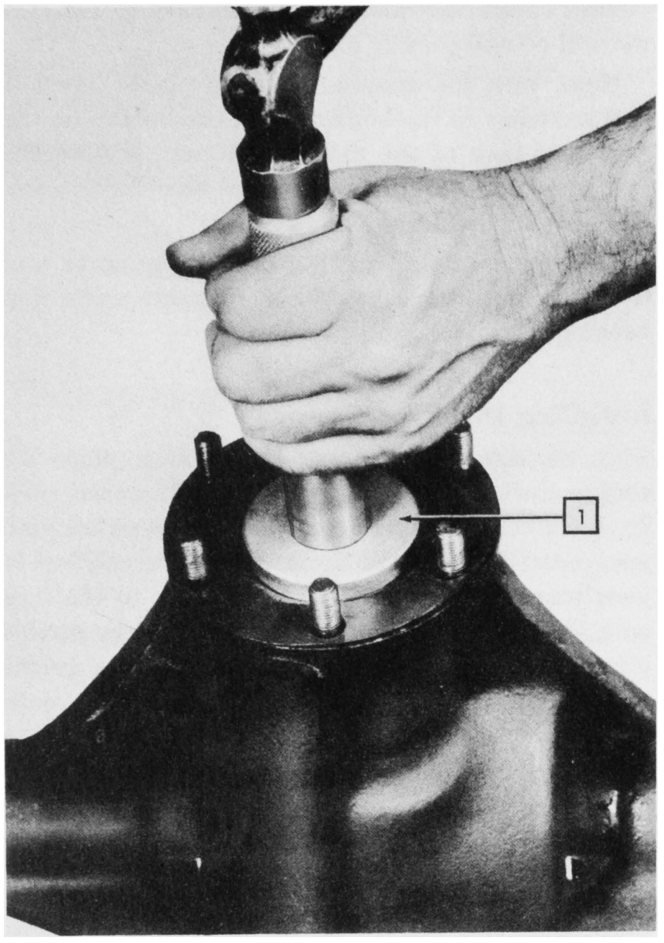


Figure 24—Installing Front Pinion Bearing Cup.

Bearing cups should be replaced so that the wide mouth of the taper is outward. Drive them straight into clean holes.

Pinion Depth Adjustment

Tolerances are required in machining any part, and each part will be machined within a high and a low limit as it is finished. To compensate for these manufacturing tolerances, pinion and ring gears are tested for tooth contact and quietness at a standard cone setting.

Some pinions may vary from this standard cone setting and, during factory testing, the amount of this variation is etched on the rear face of the pinion gear (Fig. 25). The gear is marked plus or minus the number of thousandths that the gear is above or below standard. Plus means that the gear is too close to the center line of the axle, and minus means it's too far away.

Therefore, if you're reinstalling the same pinion shaft and bearing that you removed, use the same adjusting washer. If, however, you're using a new

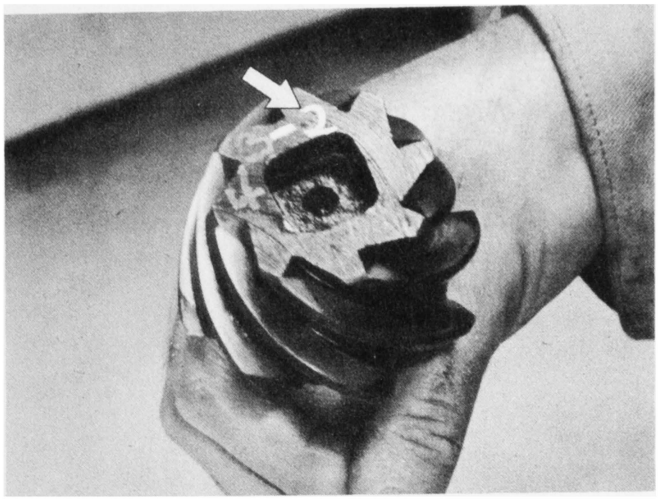


Figure 25—Inspection Marks Indicate How Much Pinion Gear Depth Varies from Standard. Marks Show That This Gear is .002″ too Far From the Ring Gear. To Compensate, a Depth Washer .002″ More Than Standard Should be Installed.

ring and pinion set or bearing, use a new adjusting washer. Here's how you determine the size of that washer.

Method No. 1

Note the inspection marks on the old and new pinion gears and "mike" the old depth washer. Compare the inspection mark on the new pinion with that on the old pinion and use a depth washer to compensate for the difference.

FOR EXAMPLE: If the old pinion is marked +2 and the new pinion is marked —3, there is a difference of .005″ away from the ring gear in these two pinions. Therefore, the new depth washer must be .005″ thicker than the old one. If the old washer "mikes" .123″, the new one should "mike" .128″.

Method No. 2

The Nash rear axle drive pinion gauge J-2499 makes selection of the right adjusting washer a positive process regardless of whether you're using new or old parts or housing (Fig. 26). Here's how you use it:

First, place the front pinion bearing cone in the bearing cup. Press the cone and revolve it to be sure the rollers are properly "set."

Then bolt the gauge plate over the bearing being sure it does not touch the housing at any point. The bolt runs down through the bearing and is secured at the pinion end of the housing by a cross piece and thumb screw.

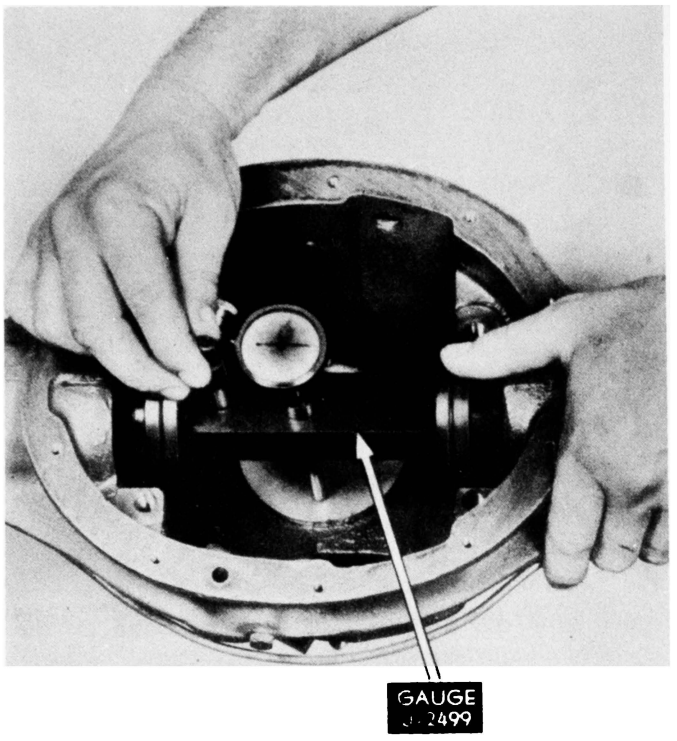


Figure 26—Nash Rear Axle Pinion Setting Gauge.

Attach a dial indicator to the tool as shown. With the indicator button on the top of the gauge pin, set the dial indicator under tension, at zero.

Install the tool with the adapters squarely seated in the side bearing recesses in the housing.

These adapters slide easily on and off the body of the tool and are reversible. For the "600" Series use them with the small diameter outward. For the "Ambassador 6" Series use them with the large diameter outward.

Then swing the gauge point across the plate until the highest reading is obtained from the dial indicator. Subtracting this reading from a constant of .140" will give you the standard adjusting washer thickness for that housing.

Of course you'll have to adjust this figure according to the depth marking on the face of the pinion gear.

FOR EXAMPLE: If when you swing the gauge point across the plate you get a reading of .016", subtracting this figure from .140" will give you a standard of .124". That means that using a standard "0" pinion, you'd need an adjusting washer of .124" thickness. If however your pinion marking read —2 (meaning that it's .002" undersize) you'd have to add this .002" to the standard. Thus, your adjusting washer would be .126".

Bearing Installation

When the proper depth washer has been selected, slide it onto the shaft against the pinion gear. Then, using the pinion bearing replacing tool J-1416, press the bearing tight against the washer and the gear. The large diameter of the bearing should be toward the gear. The tool J-1416 is not large enough to press on the "Ambassador 6" Series pinion bearing by itself. With this series use the pinion bearing spacer as an adapter with the tool.

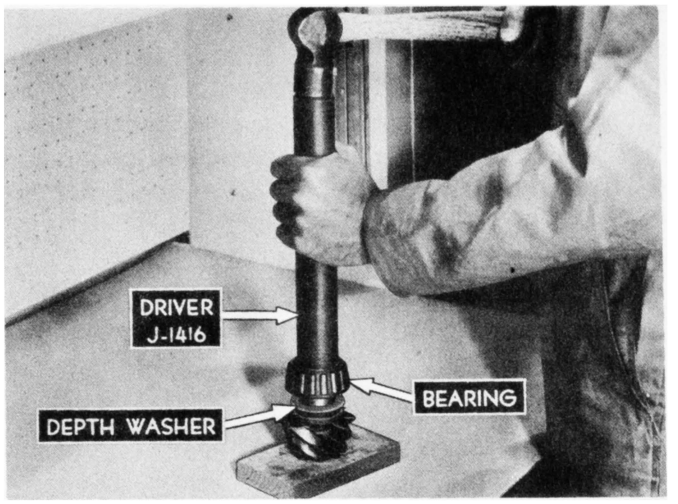


Figure 27—Driver J-1416 Sets Pinion Bearing and Depth Washer Tight Against the Pinion Gear. On the "Ambassador 6" Series the Pinion Bearing Spacer is used as an Adapter.

Finally, slide the pinion shaft and gear assembly into the housing from the rear. Tap the gear lightly and rotate it to seat the rollers in the bearing cup.

Pre-Loading Pinion Bearings

To compensate for expansion of the housing under the heat of operating conditions, the pinion bearings must be pre-loaded about .003" beyond the point where end play is eliminated.

After the pinion shaft assembly has been installed from the rear of the housing, install the bearing spacer and the same number of shims as were removed on disassembly. Place the front bearing cone in position. Now you're ready to test the pre-loading of the bearings.

On the "600" Series the bearing is held in position by the pinion nut and lock washer. Draw the nut up tight. Then test the number of inch-pounds needed to turn the shaft. If the bearings are properly loaded to .003" it will take from 12 to 14 inch-pounds of pull.

If it takes more than 14 inch-pounds to turn the shaft, add shims between the bearing and the spacer. If the shaft turns on less than 12 inch-pounds, take shims out.

The pinion holding tool and spacer J-2496 is used in combination with a spring scale to get inch-pound readings. The tool is so designed that the splined ends are exactly 6 inches from the center of the handle. Therefore, by attaching the spring scale to the center of the handle, pulling the tool around (Fig. 28), taking the reading in pounds from the scale and multiplying it by 6, you get the number of inch-pounds needed to turn the shaft. To eliminate the effect of gravity, turn the axle up so that you're pulling in a horizontal plane. In the example shown, it requires 2½ pounds at 6 inches, or 15 inch-pounds to turn the shaft (within the limits for the "Ambassador 6" Series).

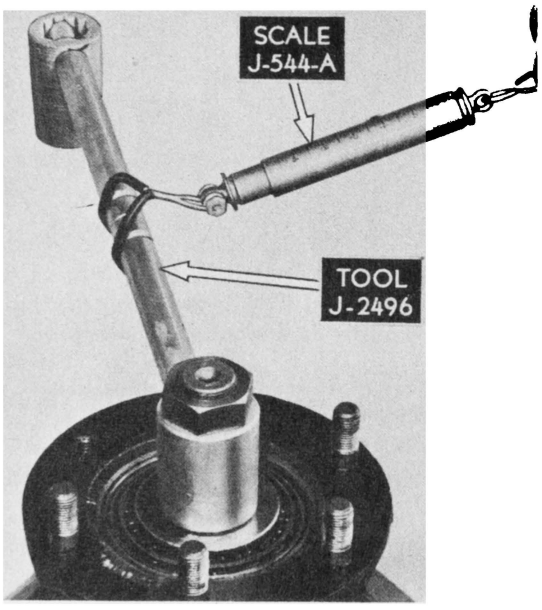


Figure 28—Tool J-2496 Plus a Spring Scale, is used to Test Pinion Bearing Load. The Above Shaft Requires 2½ Pounds at 6 Inches—15 Inch-pounds—to Turn it. "Ambassador 6" Series Shown.

On the "Ambassador 6" Series slip the tool over the splined shaft, tighten the pinion nut, and adjust the bearings the same as the "600" Series until it takes 15 to 18 inch-pounds to turn the shaft.

After the bearings are properly loaded, take out the spacing tool and install a new oil seal.

Next install the companion flange. Tool J-1375 makes quick easy work of this operation (Fig. 29). Finally, put on the pinion nut and washer and draw them up to 105 to 110 foot-pounds of pull.

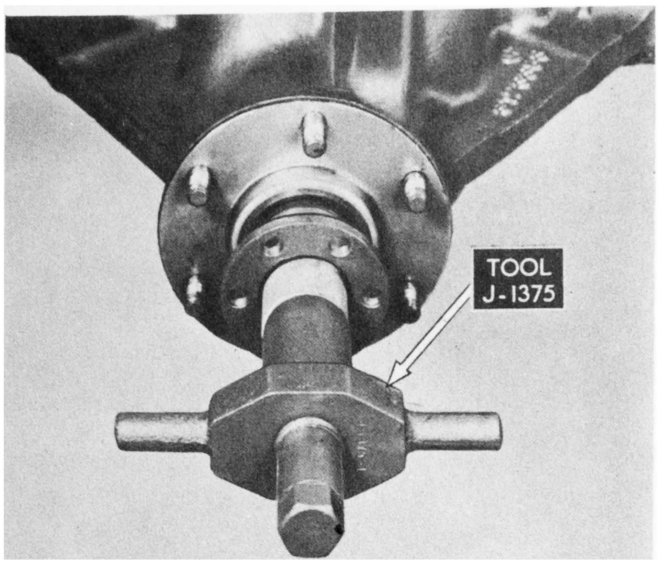


Figure 29—Tool J-1375 Makes Installation of the Companion Flange an Easy Task.

Testing Ring Gear and Pinion Backlash 1949 "600" Series

With the pinion in place, take the differential assembly with its side bearing shims and install it in the housing, being sure that the bearings are seated in the cups. Install the bearing caps and draw them down tight. Then attach a dial indicator to the housing with the button resting against one tooth of the ring gear and at right angles to it (Fig. 30). Now rock the ring gear back and forth to see how much it moves without moving the pinion. This backlash, as registered on the dial indicator, should be between .004" and .006".

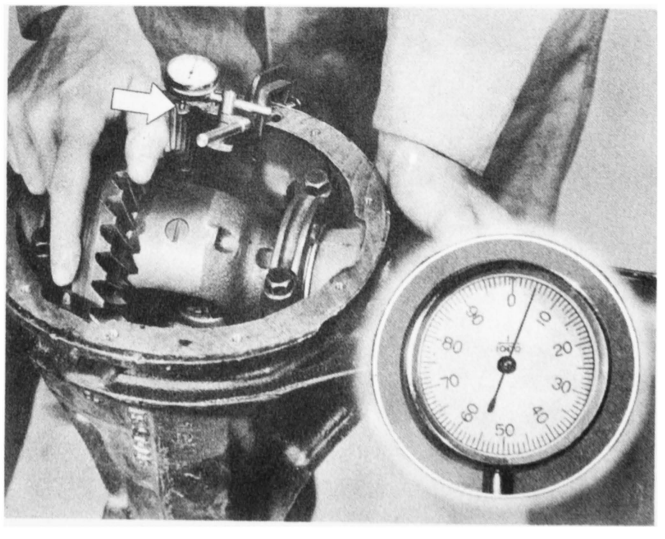


Figure 30—The Set-up for Testing Ring and Pinion Backlash. The Dial Indicator Button Should Rest on a Tooth of the Ring Gear and at Right Angles to it.

If the backlash is not within the specified limits, the side bearing shims will have to be rearranged. Backlash can be increased by putting a thinner shim on the left side and a thicker shim on the right . . . or decreased by putting a thinner shim on the right and a thicker shim on the left.

Never change the total thickness of shims. If you decrease the thickness on one side, you must increase the thickness on the other side by the same amount.

FOR EXAMPLE: If the dial indicator shows backlash to be .011", and if there are shims of .085" at each side bearing, it would be necessary to remove .005" from the right and add .005" to the left in order to reduce backlash to the maximum allowable (.006"). To do this you should replace the right shim with one of .080" thickness and replace the left one with a shim of .090" thickness. This would not affect your total of .170" thickness of shims.

Testing Ring Gear and Pinion Backlash
1949 "Ambassador 6" Series

With the pinion shaft installed and pinion bearings pre-loaded, place the differential in the housing.

With this series there are shims between the left side bearing and the case. On the right there is an adjusting nut in the housing.

Put on the bearing caps and tighten the cap screw just enough to start gripping the lock washer. Then tighten the adjusting nut on the right side of the carrier until a slight increase in tension is felt in the ring gear as you rotate it. Attach a dial indicator to the housing with the button touching one of the ring gear teeth at right angles. Rotate the ring gear against the pinion and read the backlash on the dial indicator. It should be from .004" to .006".

If backlash is more than .006", more shims will have to be placed between the left side bearing cone and the case. If backlash is less than .004", fewer shims must be used (Fig. 31).

These shims are available in .003", .005", .010" and .030" thicknesses. Used in different combinations they enable you to adjust backlash within very fine limits.

Pre-Loading Differential Side Bearings

With backlash properly adjusted, re-test the differential assembly for end play. If no end play exists the side bearings are ready for pre-loading.

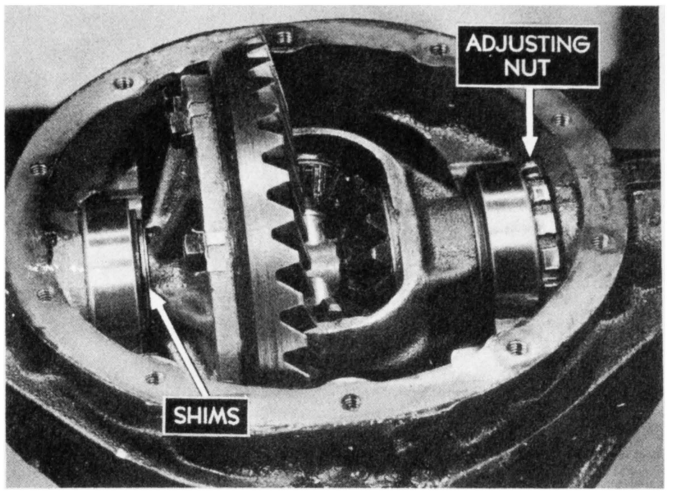


Figure 31—On the "Ambassador 6" Series, Backlash is Adjusted by Adding or Removing Shims at the Left Side Bearing . . . then Tightening the Adjusting Nut at the Right.

On assembly, all rear axle bearings are pre-loaded to compensate for heat expansion. The differential side bearings should be pre-loaded to between .004" and .006". This is the total loading for both side bearings.

1949 "600" Series

Inasmuch as the available shims are graduated in units of .005", the pre-loading cannot be divided equally between the two side bearings. This consideration has been allowed for in manufacturing however, and the assembly is designed so that pre-loading may be done at one bearing.

Therefore, with all end play removed, all you need do to pre-load both bearings is remove the right hand shim and replace it with the next size larger.

FOR EXAMPLE: In the example given, end play was eliminated and backlash adjusted by using a .090" shim on the left and an .080" shim on the right. To pre-load these bearings just replace the .080" shim on the right with an .085" shim.

Such an adjustment may affect the backlash adjustment slightly. However, the .002" tolerance (.004" to .006") in backlash adjustment is enough to absorb the difference.

1949 "Ambassador 6" Series

With backlash and end play properly adjusted, tighten the adjusting nut at the right (with the bearing caps tightened to a slight tension) until the ring is just free to rotate. When a slight binding action is

felt in the rotation of the ring gear, tighten the adjusting nut between one and two more notches. This will pre-load the bearings from .004" to .006".

To complete the installation, tighten the bearing cap screws with 105 to 110 foot-pounds of pull on a torque wrench. Re-test ring and pinion backlash with the dial indicator. Install the bearing adjusting nut lock so that the nut cannot slip out of adjustment (Fig. 32).

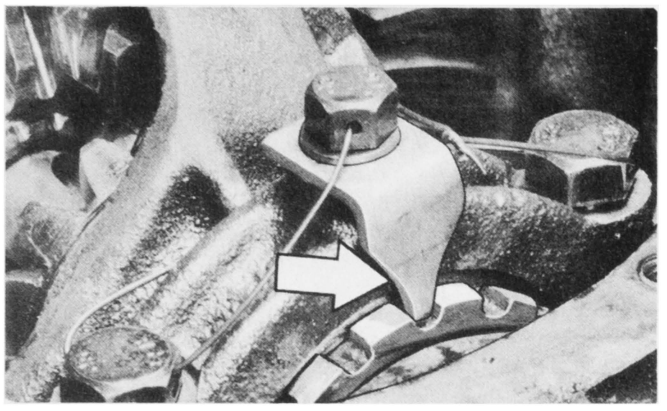


Figure 32—The "Ambassador 6" Series Bearing Adjusting Nut Lock.

Installing the Differential Assembly 1949 "600" Series

When you have determined the correct number of shims for each side bearing, you're ready for final assembly of the differential. To do this, place the entire assembly, including shims and bearing cups, in the opening of the housing. Tip the bearing cups out slightly and tap them down into the housing with a plastic hammer (Fig. 33).

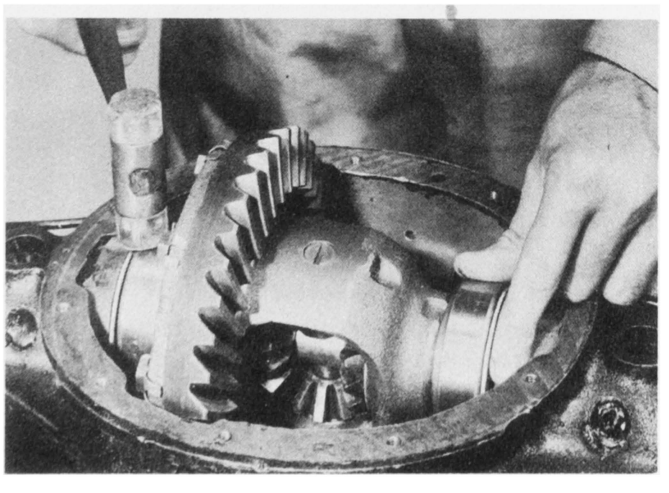


Figure 33—To Place the "600" Series Differential Assembly in the Housing, Tip the Bearing Cups Out . . . Then Tap Them Into Position With a Plastic Hammer.

When tapping the bearing cups into place be careful not to distort or damage them in any way.

Finally, put on the bearing caps and tighten the cap screws with 55 to 60 foot-pounds of pull on a torque wrench. Tap the tops of the bearing caps with a sharp blow of a hammer to set the bearing rollers in the cups. Check the ring and pinion backlash again.

Inspecting Tooth Contact

To be certain that you have adjusted the ring and pinion gears so that they mesh properly, it is necessary to inspect the tooth contact pattern.

Paint eight or ten teeth of the ring gear with a light coat of red lead in oil. Turn the ring gear around until the painted section of the ring gear is in contact with the pinion gear. Now turn the pinion with a wrench while holding the ring gear with your other hand. This causes the two gears to turn under load and impresses a pattern on the painted section of the ring gear (Fig. 34). This is the tooth contact pattern, the pattern that is the final proof of your adjustments.

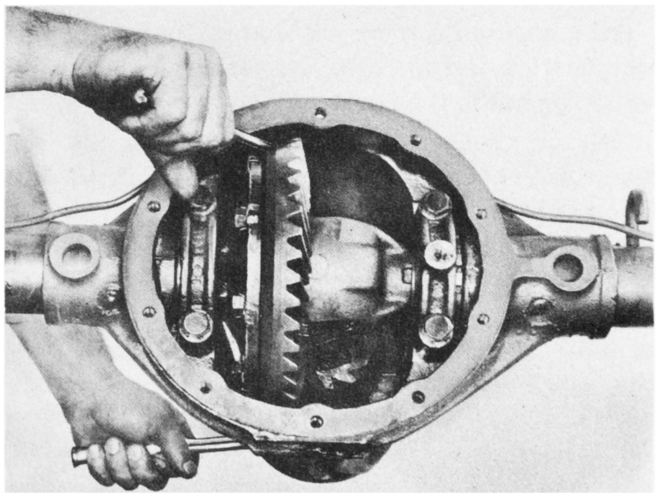


Figure 34—A Tooth Contact Pattern is Obtained by Painting Eight or Ten Teeth of the Ring Gear, Meshing the Painted Section with the Pinion Gear, Then Turning the Gears Under Load.

If all adjustments are correct the tooth contact pattern will be evenly distributed over the entire tooth as in Figure 35-A.

If the pattern is high on the ring gear, as in Figure 35-B, it means the pinion is too far from the ring gear. In that case, move the pinion toward the ring gear by placing a thicker washer between the pinion gear and the bearing.

INSPECTING TOOTH CONTACT

If the pattern is low on the ring gear tooth, as in Figure 35-C, the pinion is too close to the ring gear. Then move the pinion away from the ring gear by placing a thinner washer between the pinion gear and the bearing.

If the pattern is toward the small end or "toe" of the tooth, as in Figure 35-D, the ring gear is too close to the pinion. In that case, on the "600" Series, move the ring gear away from the pinion by putting a thinner shim on the left side and a thicker shim on the right. On the "Ambassador 6" Series, take the shim away from the left side and tighten the adjusting nut on the right.

If the pattern is at the large end or "heel" of the tooth, as in Figure 37-E, the ring gear is too far from the pinion. Then move the ring gear toward the pinion, on the "600" Series, by putting a thinner shim on the right side and a thicker shim on the left side. On the "Ambassador 6" Series, put more shim into the left side and set the adjusting nut accordingly.

When making toe or heel adjustments on the "600" Series, be sure you keep the same total thickness of shims at the side bearings.

Replacing Axle Shaft Bearings

Press axle shaft bearings onto the axle shafts with the small diameter of the cone toward the outer, tapered end of the shaft. The pinion bearing replacing tool J-1416 does the job.

Installing Axle Shafts

The inner axle oil seal is extremely important in keeping lubricants around the bearings. Always use new seals when reassembling an axle. Soak the seals for at least 30 minutes in light lubricating oil to make them soft and pliable and to prevent their being burned out in operation. Then install the seal, using the shaft oil seal replacer (J-2626) on the "600" Series and (J-1556) on the "Ambassador 6" Series (Fig. 36).

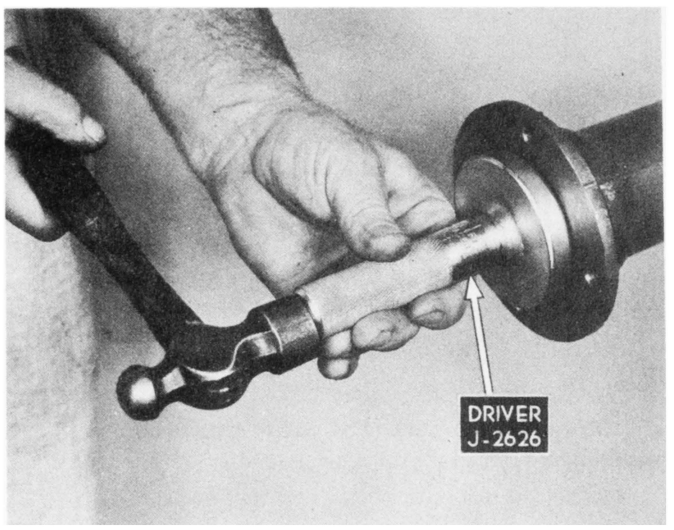


Figure 36—New Oil Seals Should Always be Installed When Axles are Reassembled.

Next, install the axle shaft and bearing. Put it into the housing and index the splined end with the differential side gear. Lubricate the bearing properly.

NOTE: *On the "Ambassador 6" Series, the right hand axle shaft is 1½" longer than the left hand shaft.*

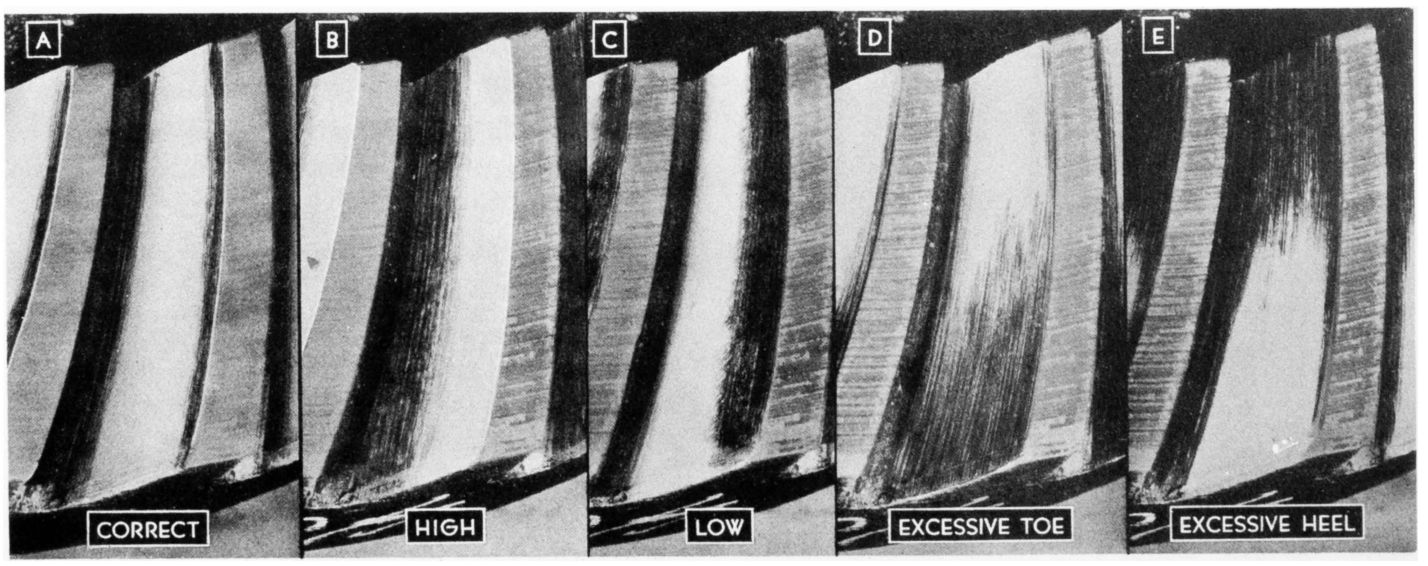


Figure 35—Tooth Contact Patterns. If All Adjustments are Correct and Gear Teeth are Meshing Properly, the Pattern Will be Evenly Spread Over the Face of the Tooth as in A.

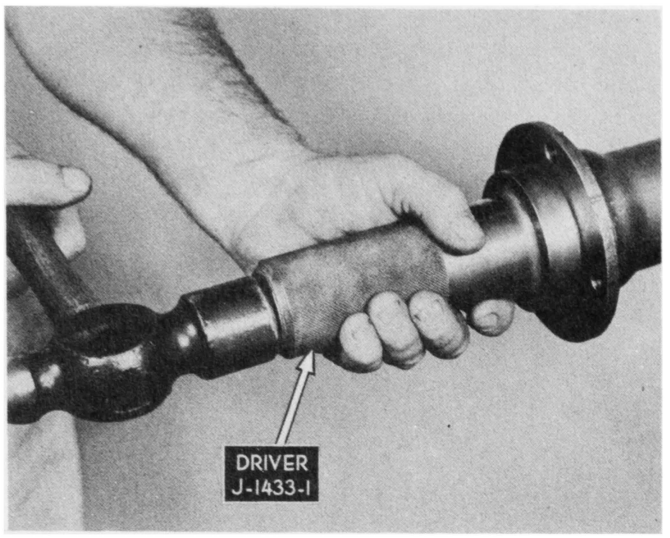


Figure 37—The Outer Axle Shaft Bearing Cup is Driven with Tool J-1433-1.

Finally, install the outer axle bearing cup, driving it into position with the axle shaft bearing cup replacer (J-1433-1) as shown (Fig. 37).

Installing the Brake Backing Plates

Before placing the brake backing plate onto the end of the axle, place a new outer oil seal in the plate. This is important because this seal must be in good condition to keep axle lubricants from getting into the brakes.

There is no provision for lubricating the wheel bearings after assembly. Therefore, pack the bearings with wheel bearing lubricant before assembling the brake backing plate.

Slide the original shims onto the axle. Then install the backing plate, spacer and cover. Tighten the cap screws that hold the backing plate to the axle housing flange. Then strike the end of each axle shaft with a lead hammer to drive the bearing cup on the opposite side solidly into position.

If the thickness of the original shims is not known start with .030″ of shims on each side. This will protect the thrust block from being damaged on assembly until the correct axle adjustment is made. Line up the drain hole in the shims with the hole in the case.

Adjusting Axle Shaft End Play

With the axle shafts and brake backing plates installed and tightened, attach the axle shaft end play checking tool (J-2092) to the end of one shaft,

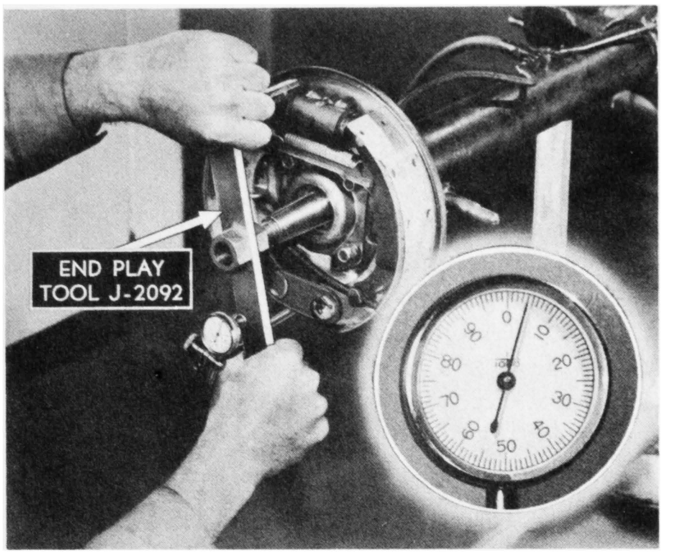


Figure 38—Axle Shaft End Play Should be Between .002″ and .004″.

and affix a dial indicator to the backing plate or on the flat side of the checking tool. Then grasp the tool in both hands, pull it in and out, and read the end play on the dial. It should be between .002″ and .004″ (Fig. 38).

If end play is outside these limits, it will be necessary to add or remove shims inside the backing plate. But first look at the axle shaft thrust block in the differential and see if it is approximately centered, with at least 1/16″ clearance on either side of the spider shaft. Then, to increase end play, add shims. To decrease end play, remove shims. Finally, check again to be sure the shims are so divided between the two axle ends that the thrust block is centered.

Installing the Wheel Hub

Before installing the wheel hub, check the key to be sure it fits snugly in the keyways, both in the axle shaft and in the hub (Fig. 39).

Make sure that the tapers of the hub and axle are clean and dry.

Line up the keyways in the shaft and the hub, insert the key, and drive the hub onto the shaft—being sure that the outer end of the key is flush with the hub.

Finally, put on the thrust washer and axle nut, and tighten the nut. Of course, after the axle has been installed on the car, you'll want to tighten the axle nuts again so you can be sure they're good and tight.

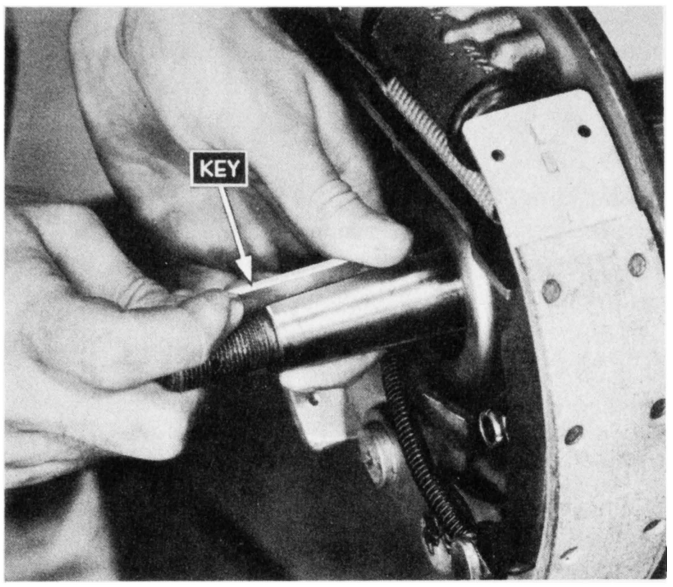


Figure 39—The Key Should Fit Smoothly and Tightly into the Axle Shaft Keyway.

Completing the Assembly

After the axle has been installed on the car, fill the axle with hypoid lubricant. For complete and correct lubrication of Nash rear axles refer to your lubrication chart.

While the car is on the lube hoist, make sure the vent in the housing is clear; if it is plugged, pressure may form in the housing and cause oil seal failure.

FINAL INSPECTION

When the job has been completed—the axle disassembled, inspected, corrected, reassembled, and lubricated—give it another thorough road test and inspection as detailed in the first part of this manual section.

Give the axle the four tests to be sure it operates smoothly and quietly under all conditions.

PROPELLER SHAFT SECTION

TORQUE TUBE REMOVAL

1949 "600" and "Ambassador 6" Series

Raise the rear end of the car and place supports under the body or the bumper brackets.

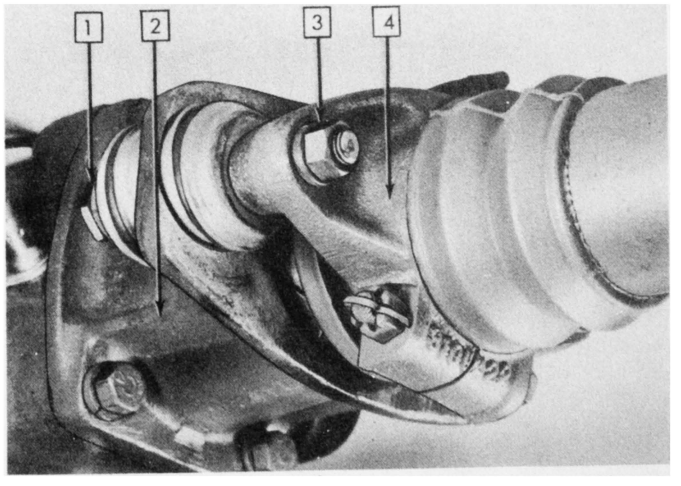
Disconnect the hand brake cable at the center equalizer.

Loosen the rear spring seats at the axle and disconnect the sway bar at the axle end.

1949 "600" Series

Disconnect the truss rods at the center bracket, and disconnect the trunnion bracket from the adapter by removing the front nuts, bushings and the retainers from the dowel studs as shown in Figure 40.

Move the torque tube and axle backward to clear the studs. The universal joint, which is a light press



1. Front stud nuts
2. Adapter
3. Rear stud nuts
4. Trunnion bracket

Figure 40—Remove the Trunnion Bracket Front Nuts.

fit, may now be pried from the splines on the propeller shaft.

Disconnect the torque tube from the rear axle housing and move the tube forward as shown in Figure 41.

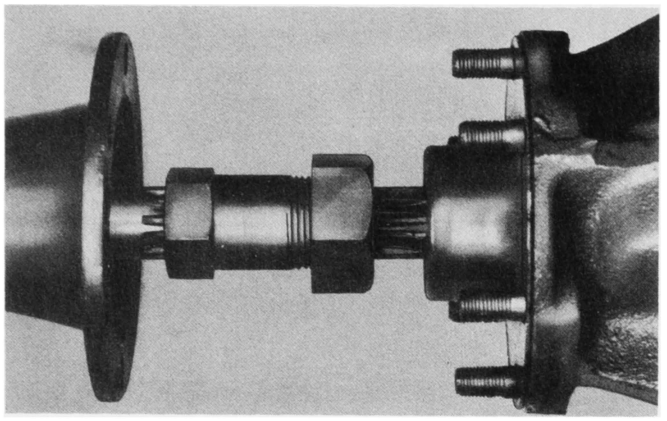


Figure 41—"600" Series Propeller Shaft Coupling.

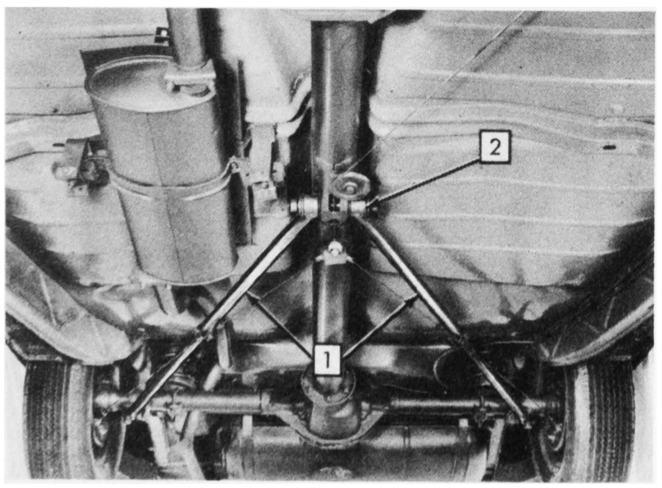
Loosen the coupling nut and disconnect the coupling from the pinion shaft.

"600" Series Coupling

When installing the propeller shaft coupling to the pinion shaft on the "600" Series, the coupling nut must be drawn to 300 foot-pounds of torque to prevent loosening.

1949 "Ambassador 6" Series

To remove the torque tube, disconnect the truss rods at the axle and at the center bracket on the torque tube as shown in Figure 42.



1. Truss rods 2. Center bracket

Figure 42—"Ambassador 6" Series Torque Tube Assembly.

Disconnect the torque tube from the transmission adapter and move the axle and tube to the rear. This will allow the universal joint, which is a light press fit, to be removed from the front of the propeller shaft.

Disconnect the rear of the torque tube from the rear axle housing and move the tube forward. This will permit the propeller shaft flange to be disconnected as shown in Figure 43.

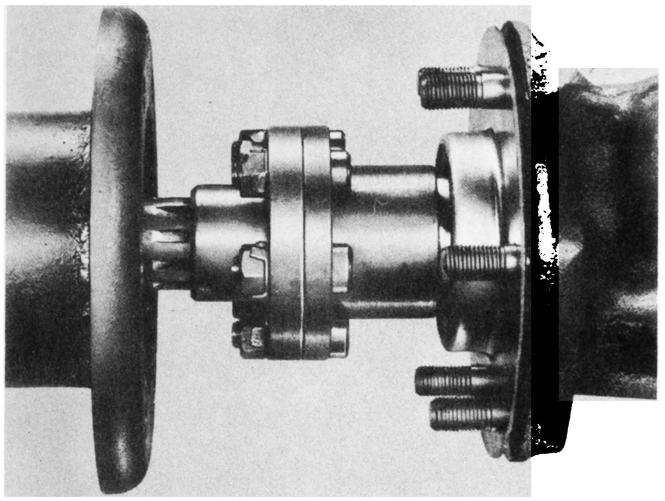


Figure 43—"Ambassador 6" Series Propeller Shaft Flange Coupling.

REMOVING THE PROPELLER SHAFT AND CENTER BEARING

1949 "600" and "Ambassador 6" Series

Propeller Shafts

The propeller shafts on these series are splined at each end—at the front end for the universal joint, which is a light press fit; and at the rear end for the pinion coupling, which is a tight press fit.

1949 "600" Series

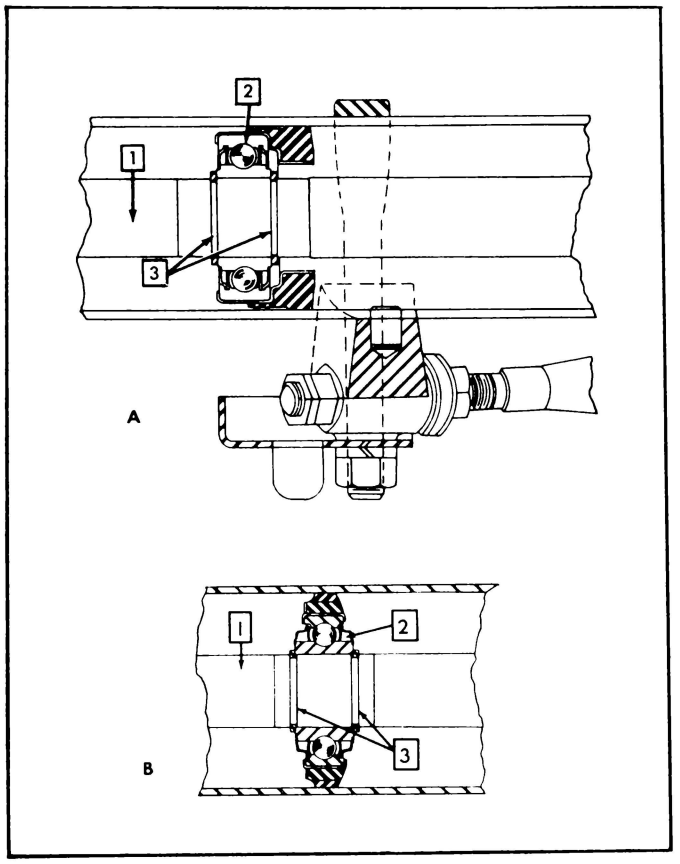
The propeller shaft on this series is removed and installed from the rear of the torque tube.

1949 "Ambassador 6" Series

The propeller shaft on this series is removed and installed from the front of the torque tube.

Propeller Shaft Center Bearing

A prelubricated, rubber-mounted ball bearing is used in these series cars. This bearing is retained



1. Propeller shaft
2. Bearing and retainer
3. Snap rings

Figure 44—(A) "600" Series Propeller Shaft Center Bearing. (B) "Ambassador 6" Series Propeller Shaft Center Bearing.

on the propeller shaft by two snap rings as shown in Figure 44.

To facilitate the removal and installation of the propeller shaft center bearing, the shaft is machined .003" undersize from the front of the shaft to the bearing seat. Therefore, to remove the bearing from the shaft it must be driven from the rear toward the front of the shaft. The bearing is replaced from the front of the shaft and driven toward the rear.

Use new retaining snap rings and see that they are properly seated.

TRUSS RODS

1949 "600" Series

In assembling the torque tube to rear axle truss rods, both rods should be drawn up in a uniform manner at the front bracket, and locked securely in place so that the torque tube is in proper alignment with the rear axle.

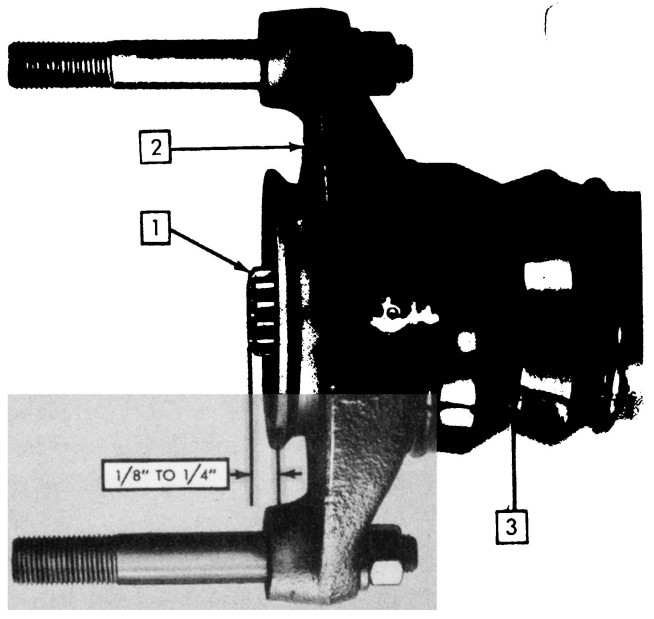
TORQUE TUBE TRUNNION BRACKET

1949 "600" Series

The front of the torque tube has a coarse pitch thread on which the trunnion bracket operates.

This bracket is slotted on the underside and is provided with an adjustable clamp screw. This clamp screw should be drawn up tight enough to remove excess clearance without setting up friction. The trunnion bracket must be free to move on the tube.

In assembly, when the rear end of the propeller shaft is against the pinion shaft and the torque tube is secured to the axle housing, the front end of the propeller shaft must protrude from ⅛ to ¼ inch beyond the front face of the trunnion bracket, as shown in Figure 45. A projection of less than ⅛ inch may cause contact between the universal joint slinger and the bracket. More than ¼ inch will make the slinger ineffective.



1. Propeller shaft
2. Trunnion bracket
3. Rubber boot

Figure 45—"600" Series Propeller Shaft Projection.

LUBRICATION

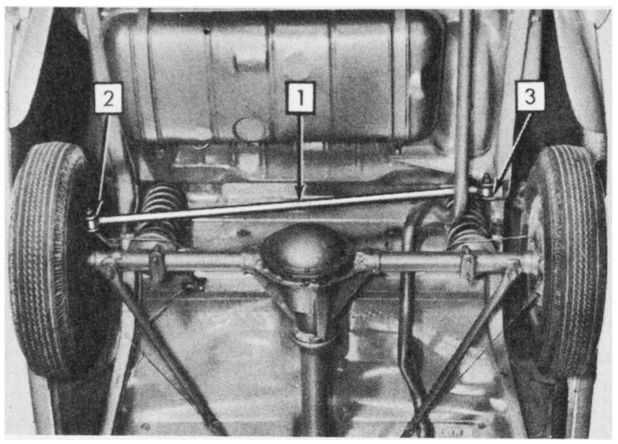
Lubricate sparingly every 5,000 miles, using pressure lubricant.

A rubber boot is provided to protect the threaded section against road dirt (Fig. 45).

REAR AXLE TRACK BAR (STABILIZER)

The function of the rear axle track bar (stabilizer) is to maintain vertical alignment between the rear axle and the body, irrespective of the spring movements (Fig. 46).

Always check the connection at the rear axle and body bracket. Looseness at these points can produce a shimmy or road tramp.



1. Track bar
2. Rear axle bracket
3. Body bracket

Figure 46—Rear Axle Track Bar. "Ambassador 6" Series.

UNIVERSAL JOINTS

1949 "600" and "Ambassador 6" Series

Universal Joint Disassembly

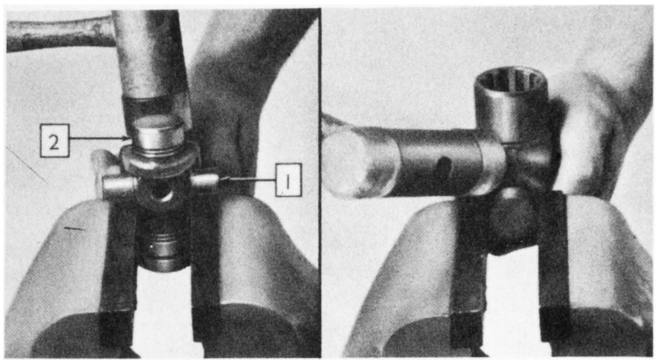
The front end (with the coil spring) is a slip fit on the transmission end and a light press fit on the propeller shaft.

The four end bearings, or roller retainers, are identical in this type of joint and are held in yoke ends by snap rings.

The snap rings are removed by securing the joint in a vise and using a hammer and punch.

After the snap rings have been removed, the assembly should be placed on parallels or in a vise, as shown in Figure 47, with the trunnions of the cross resting on the parallels or vise jaws. By striking the suspended yoke with a soft hammer, as shown, the yoke member will be driven down to a point where it contacts the cross. This will leave the end bearing protruding.

Carefully clamp the projecting end bearing in a vise, and then strike the yoke member with a soft



1. Trunnions
2. End bearings

Figure 47—Removing End Bearing from the Yoke.

hammer until the bearings are completely released as shown in Figure 47. The end bearings should be a tight press fit in the yoke.

Universal Joint Assembly

Install cross in yoke and partially assemble end bearings with *new cork seal washers* in place. Rest

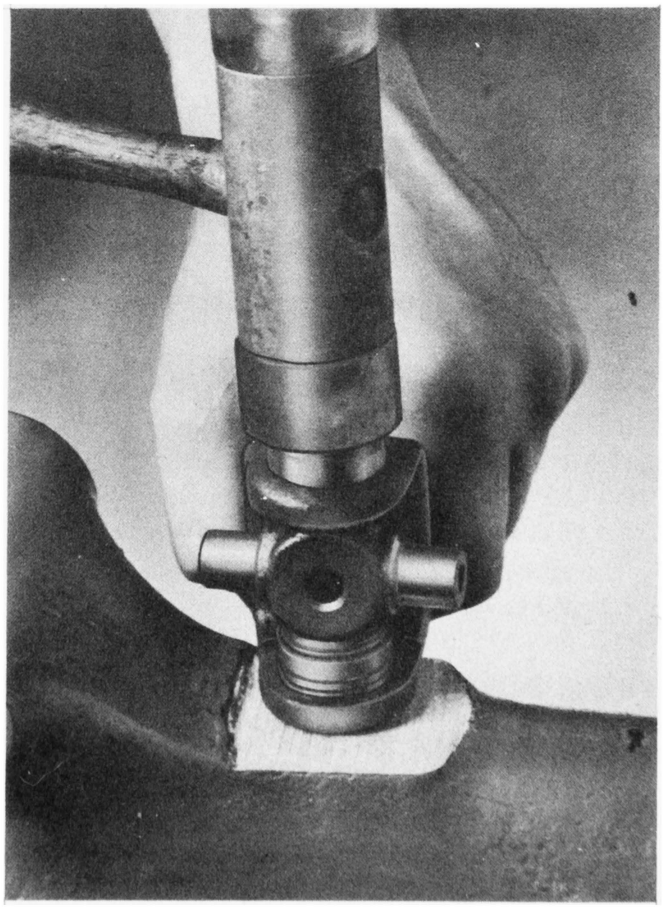


Figure 48—Assembling End Bearings to Yoke.

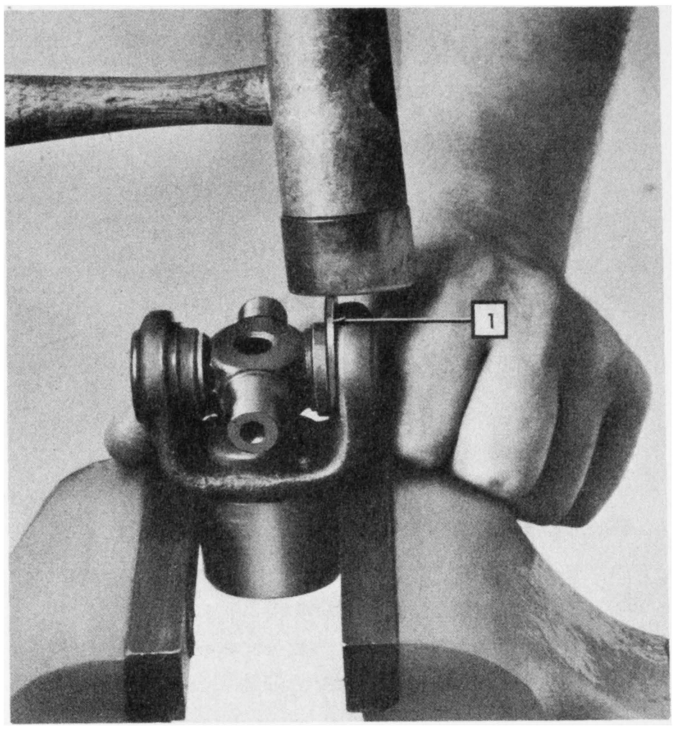
one of the end bearings on a flat plate, as shown in Figure 48, and drive on the other end bearing with a soft hammer.

When both end bearings are approximately flush with the outside of the yoke, the snap rings are installed.

Always use *new snap rings* and make sure that they are securely seated in the grooves of the end bearings. After both snap rings are in place support the cross in a vise, as shown in Figure 48, and tap yoke lightly with a soft hammer so that the snap rings are seated against the inside surface of the yoke.

LUBRICATION

The universal joint bearings are lubricated at time of assembly for the normal life of the part. However, to prolong satisfactory service, they should be disassembled, inspected, and lubricated at 15,000 mile intervals, using a semi-fluid lubricant.



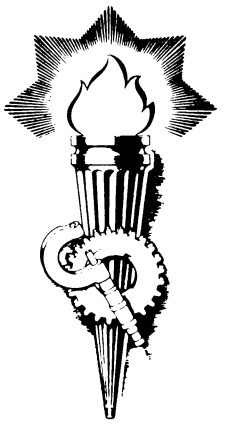
1. Snap rings

Figure 49—Installing Snap Rings.

SPECIFICATIONS FOR NASH REAR AXLES

	"600" Series	"Ambassador 6" Series
Type	Semi-Floating	Semi-Floating
Drive Gear Type	Hypoid	Hypoid
Ring Gear and Pinion Backlash	.004"-.006"	.004"-.006"
Axle Shaft End Play	.002"-.004"	.002"-.004"
Pinion Shaft Bearing Tension	12 in.-lbs.-14 in.-lbs.	15 in.-lbs.-18 in.-lbs.
Pinion Bearing Adjustment	Shims	Shims
Differential Side Bearing Pre-Load	.004"-.006"	.004"-.006"
Differential Side Bearing Adjustment	Shims	Adj. Nut
Axle Shaft End Play Adjustment	Shims	Shims
Lubrication Capacity	3 pts.	4 pts.
Type of Lubrication	SAE 90 HYPOID	SAE 90 HYPOID
REAR AXLE RATIO (STANDARD)	4.4-1	4.1-1
REAR AXLE RATIO (WITH OVERDRIVE)	4.9-1	4.4-1

FRONT AXLE—
FRONT SUSPENSION
STEERING SECTION



Nash

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Printed in U.S.A.

September 1, 1948

FRONT AXLE—FRONT SUSPENSION—STEERING GEAR SECTION

NASH TECHNICAL SERVICE MANUAL

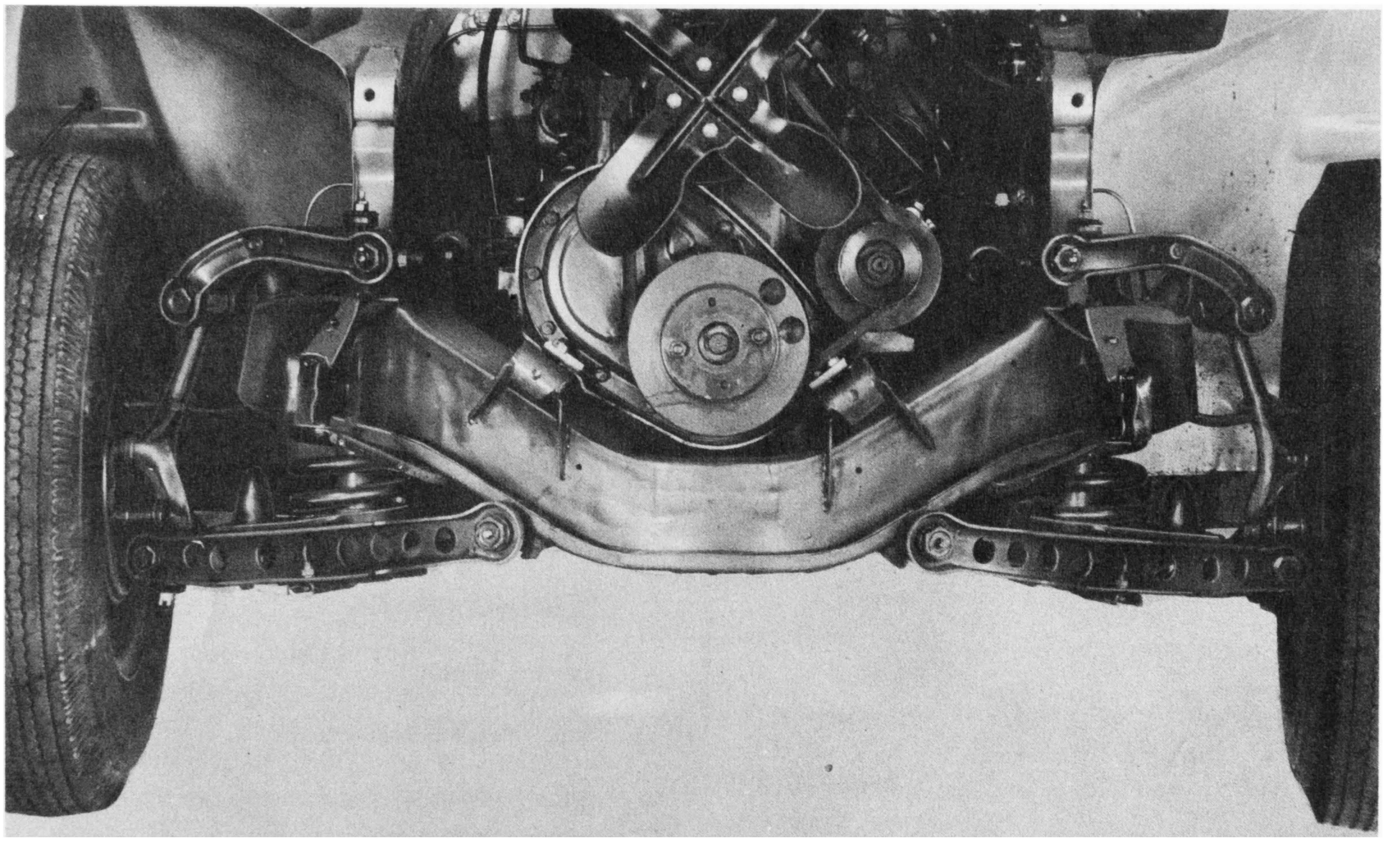
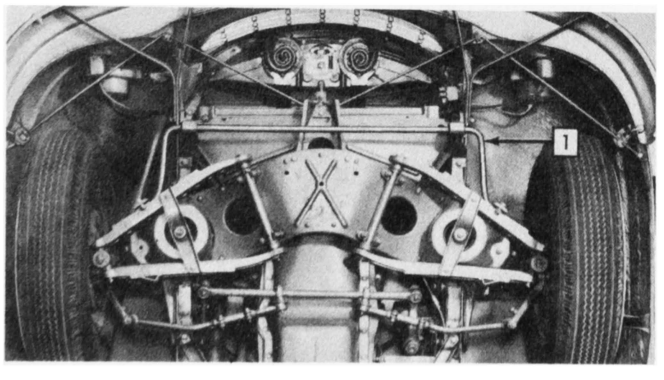


Figure 1—Front Suspension Assembly—"600" Series.



1. Stabilizer bar

Figure 2—Front Suspension Assembly. Bottom View, "Ambassador 6" Series.

FRONT SUSPENSION

1949 "600" and "Ambassador 6" Series

All operating parts of the front suspension can be removed for inspection or replacement without disturbing the cross member mounting.

If the front suspension should become severely damaged, it may be advisable to remove the complete assembly. This assembly is an integral part of the body and serves as the body side sill extension, as shown in Figure 3. It is mounted into position by four rubber insulated mounting bolts. (Figs. 4 and 5).

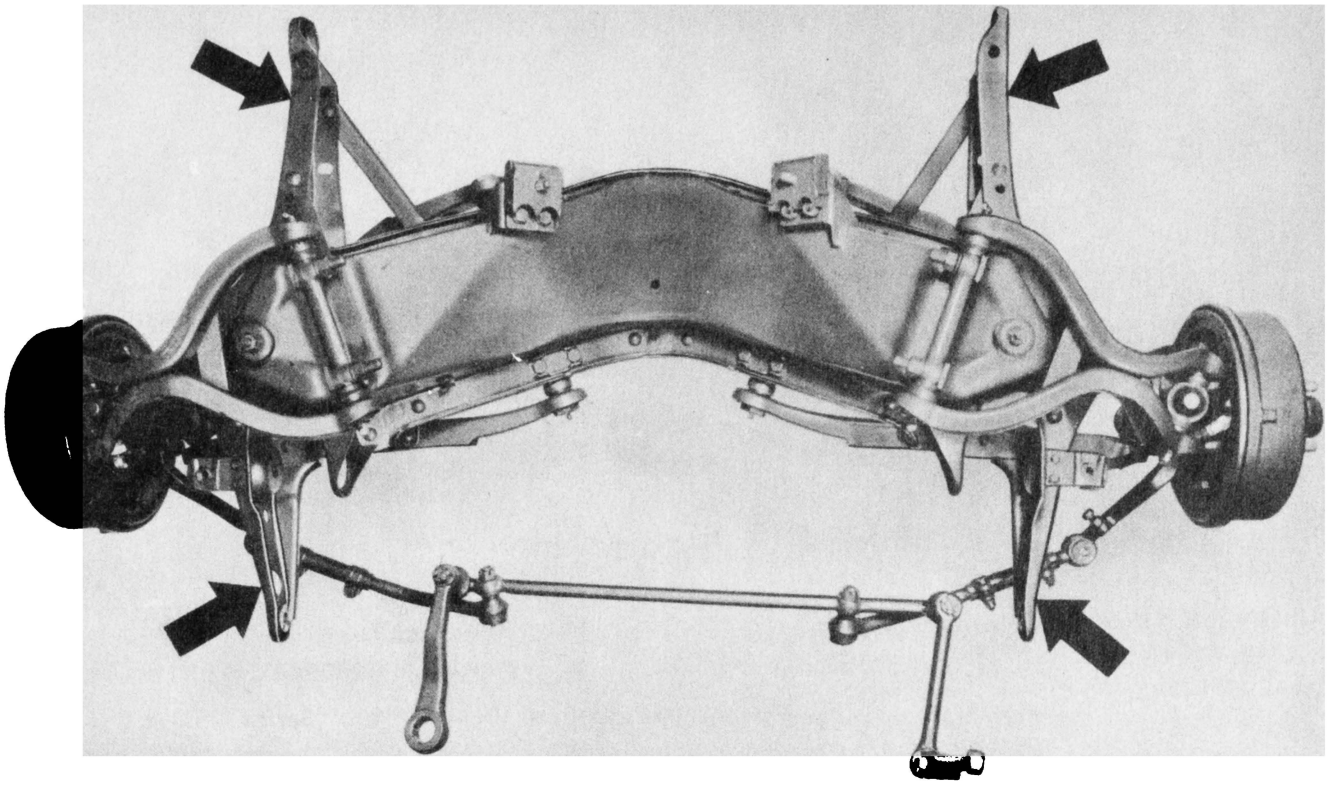
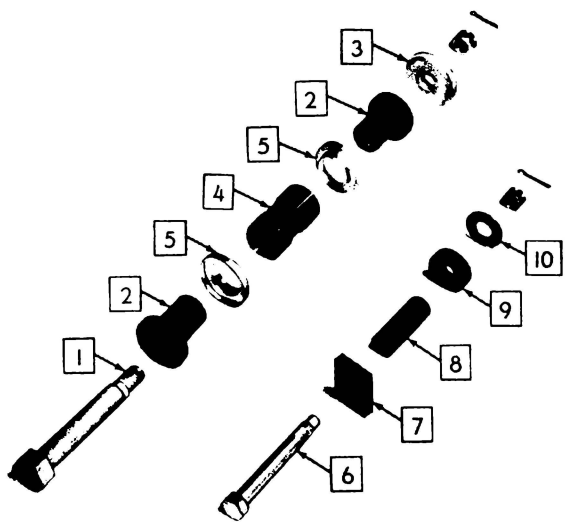


Figure 3—Front Suspension Assembly and Body Side Sill Extensions—"600" Series Shown.



1. Front suspension to body sill, bolt (front)
2. Front suspension to body sill, rubber grommet
3. Front suspension to body sill, bolt nut washer
4. Front suspension to body sill, sleeve
5. Front suspension to body sill, rubber grommet collar
6. Front suspension to body sill, bolt (rear)
7. Front suspension to body sill, bolt insulator (square)
8. Front suspension to body sill, bolt sleeve (rubber)
9. Front suspension to body sill, bolt Fabreeka (round)
10. Front suspension to body sill, bolt nut washer

Figure 4—Front Suspension Body Mounting Assembly.

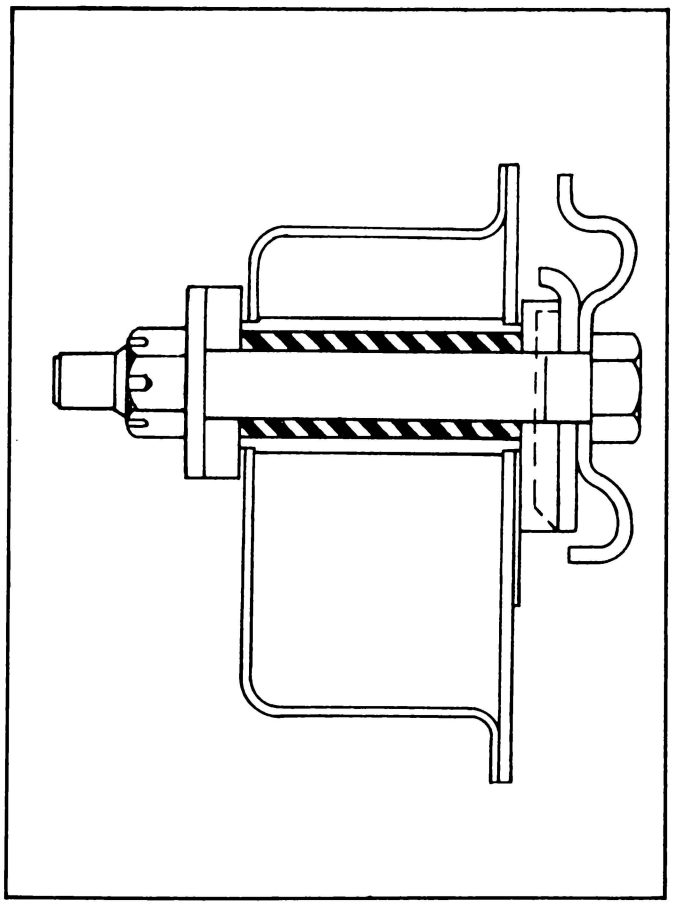
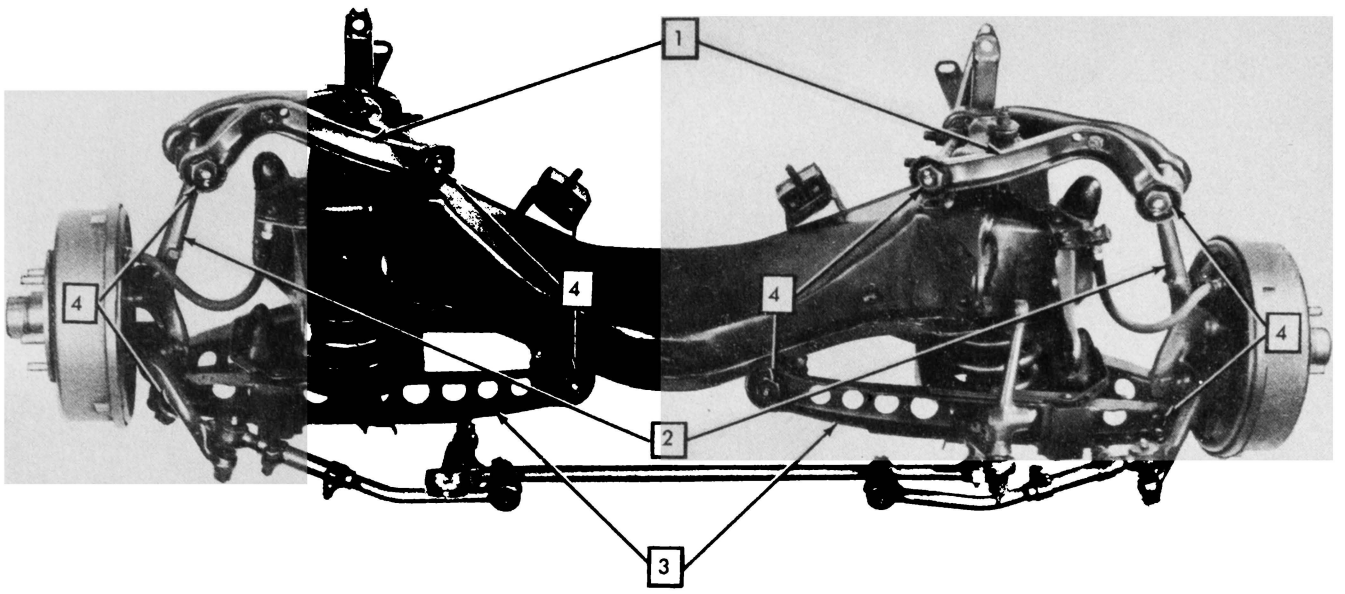


Figure 5—Front Suspension Body Mounting Bolt (Rear).



1. Upper control arms
2. Steering knuckle pins
3. Lower control arms
4. Threaded bushings

Figure 6—Front Suspension Assembly (Rear View) —"600" Series

THE UPPER AND LOWER CONTROL ARMS

1949 "600" and "Ambassador 6" Series

The upper and lower control arms permit the steering knuckle pin and wheel assembly to move through a vertical plane only. The lower control arms are longer than the upper, thus providing for a change in camber of the front wheels. This compensates for variations in front wheel tread width which occur as the coil springs expand or compress under road shocks.

The upper and lower control arms are provided with threaded bushings at the pivot bar and trunnion ends, as shown in Figure 6.

The threaded bushings and bolt connecting the outer ends of the upper and lower control arms are provided with rubber seals to retain lubricant and prevent the entrance of dirt. In making this assembly, the threaded bushings must be equalized

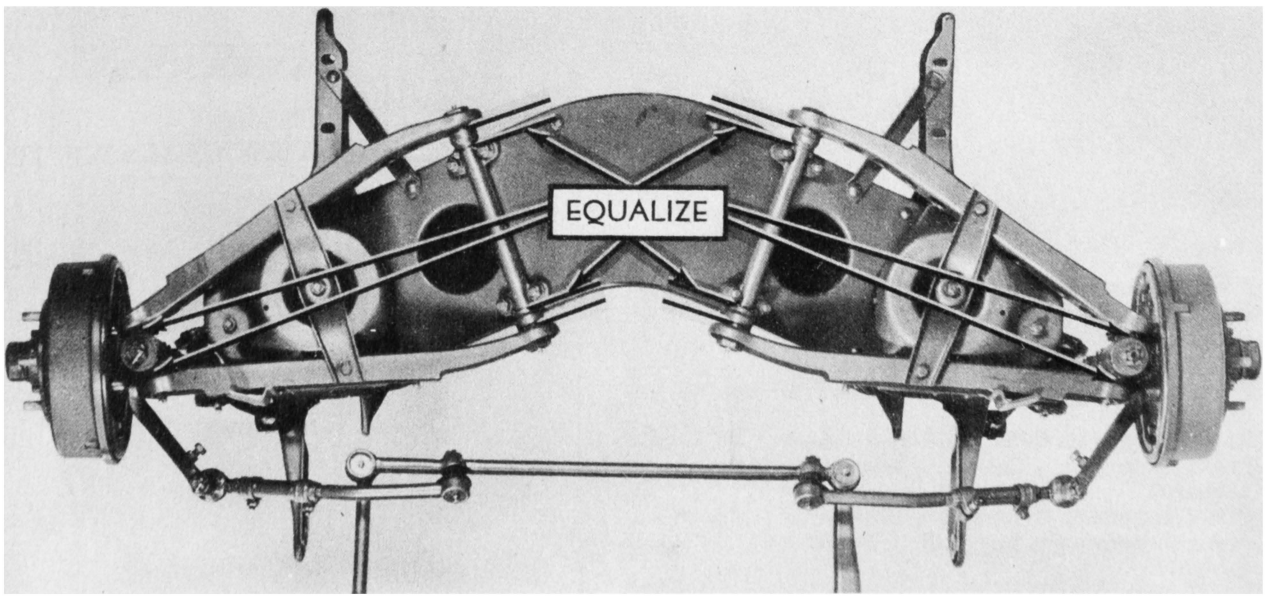
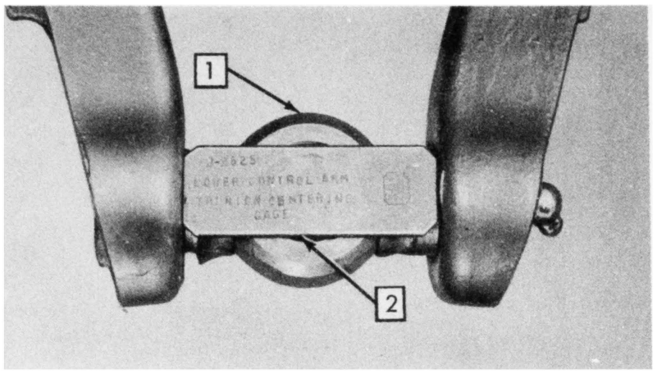


Figure 7—Threaded Bushing Clearance. The Clearance Provided on One Side of the Control Arm Must Equal the Clearance Provided for the Bushing on the Opposite Side.

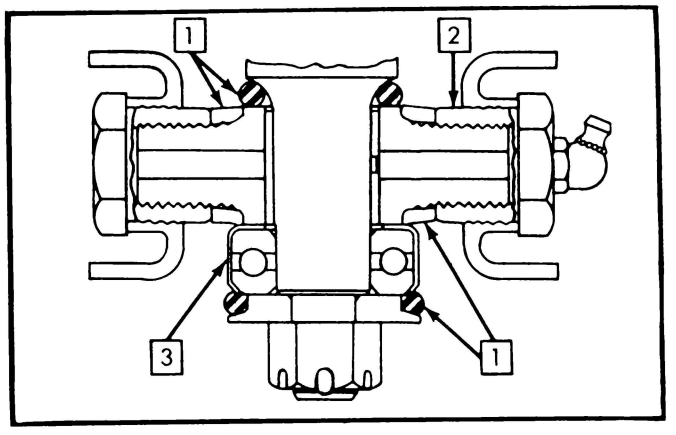


1. Trunnion
2. Trunnion centering gauge (J-2625)

Figure 8—Lower Control Arm Trunnion Centering Gauge (J-2625).

at the inner end of the upper control arm, as shown in Figure 7. All threaded bushings are drawn up to a tension of 125 foot pounds in order that the bushings will be locked and held in place by the external threads.

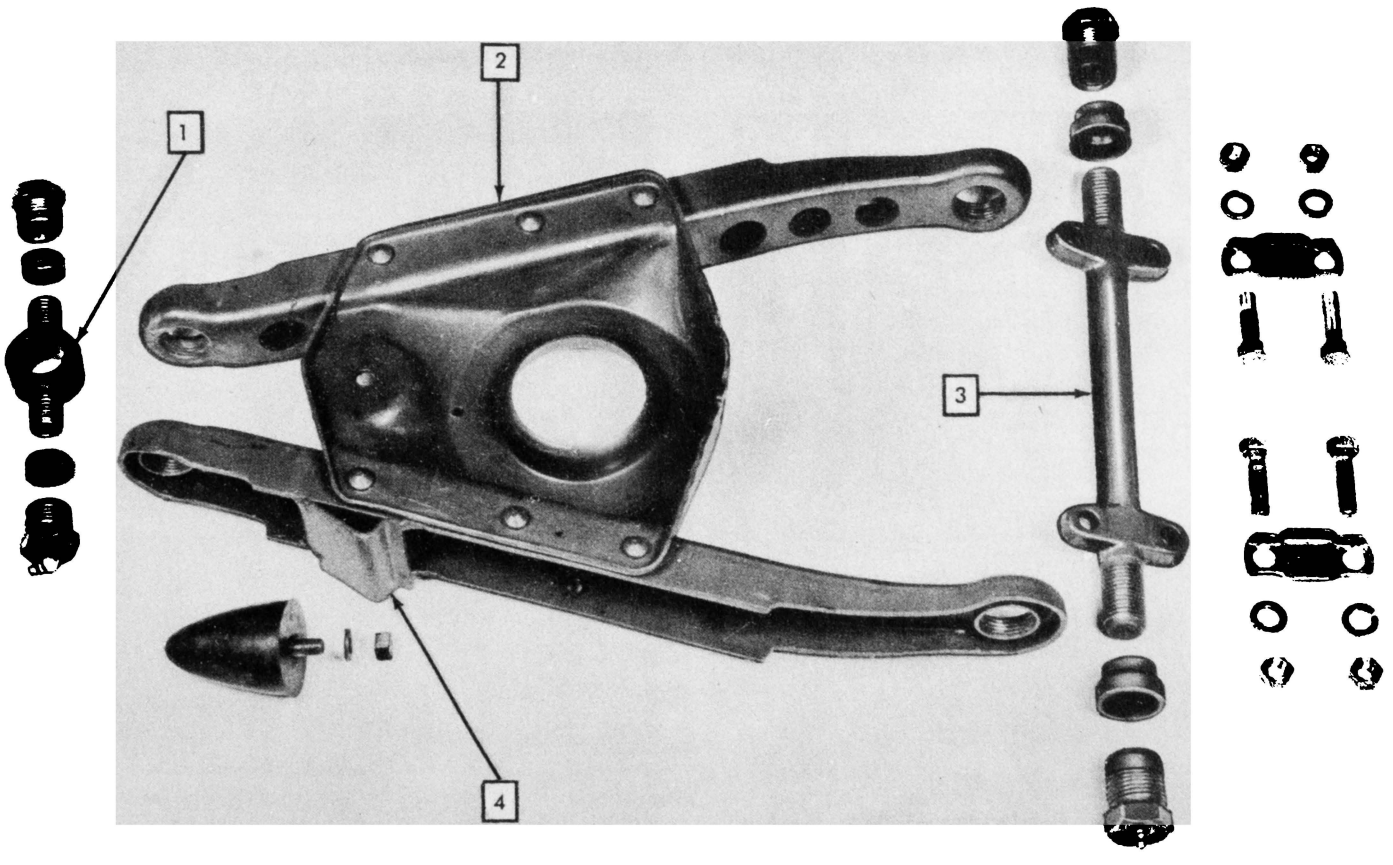
A trunnion centering gauge tool (J-2625) can be used to center the lower control arm trunnion, as shown in Figure 8 and Figure 10.



1. Dirt seals
2. Trunnion bushings
3. Thrust bearing

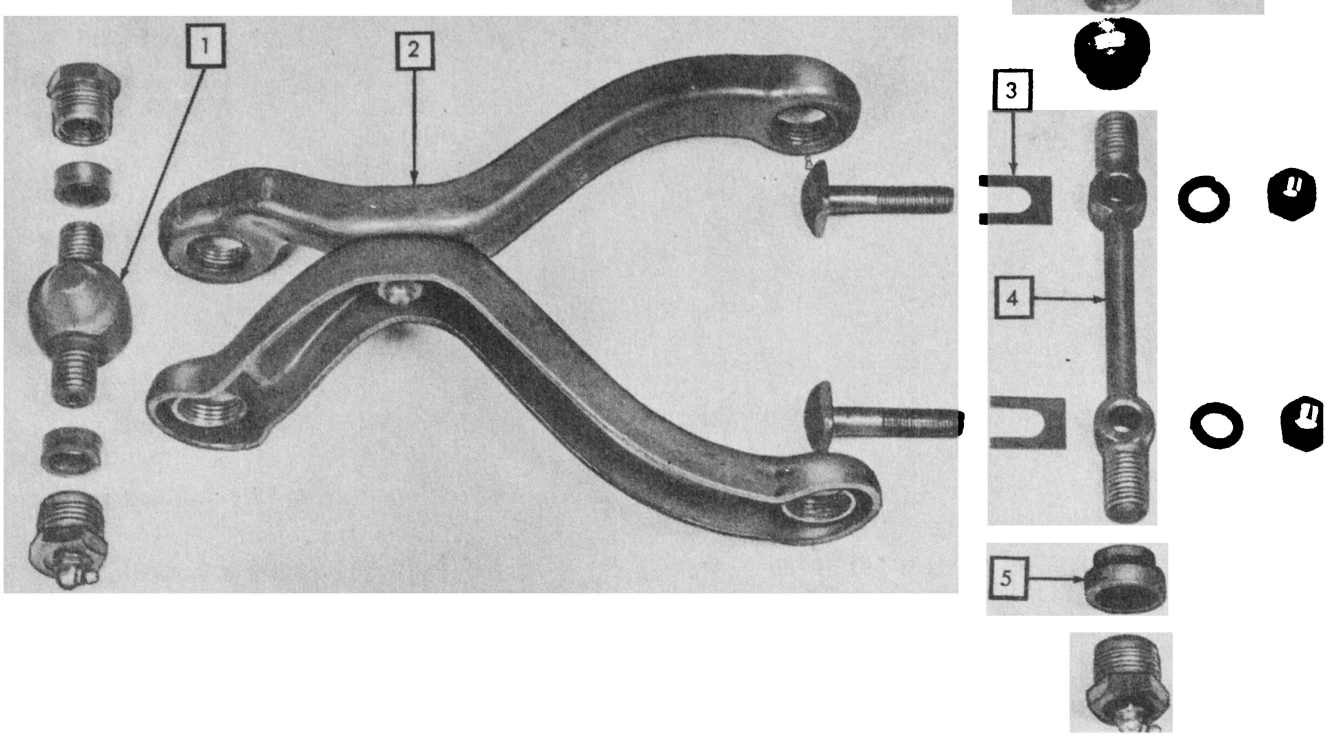
Figure 9—Cross Section Through Lower Trunnion.

When installing a steering knuckle pin into the upper control arm trunnion, a clearance of approximately ¼" must be provided between the lower edge of the trunnion and the seal seat of the knuckle pin (Fig. 12). This is to prevent compressing the grease seal and to keep from binding the knuckle pin in the trunnion.



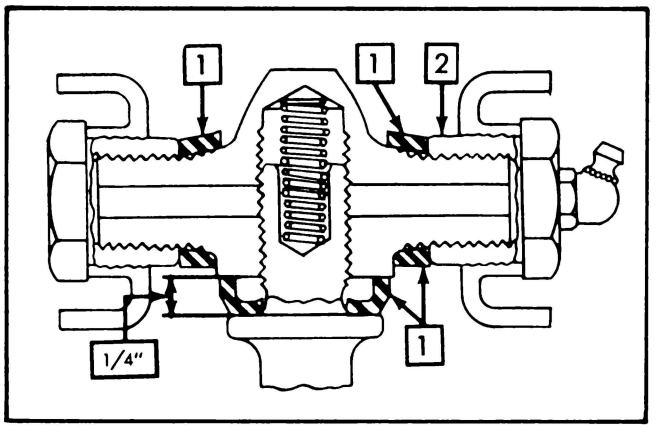
1. Lower control arm trunnion
2. Lower control arm
3. Lower control arm pivot bar.
4. Steering arm adjusting screw plate (Stop bracket)

Figure 10—Lower Control Arm Assembly Sequence.



1. Upper control arm trunnion
2. Upper control arm
3. Caster and camber shims
4. Upper control arm pivot bar
5. Dirt seal

Figure 11—Upper Control Arm Assembly Sequence.



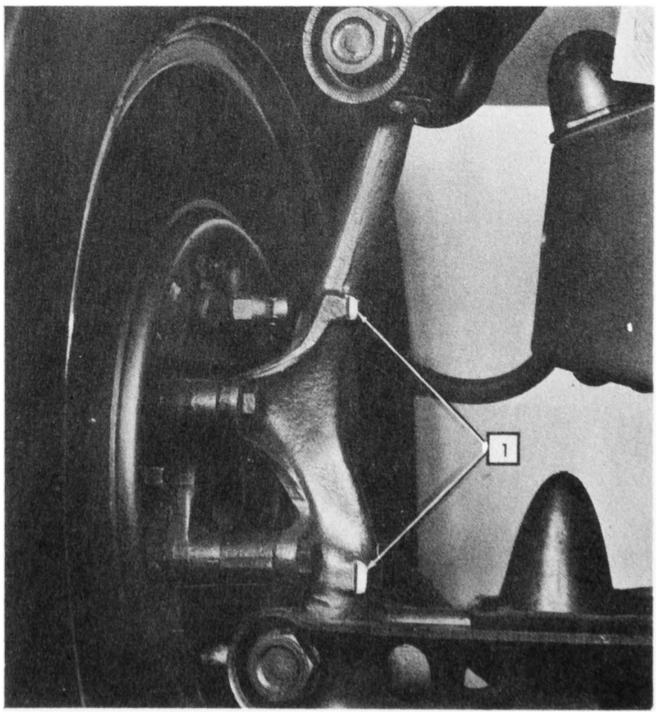
1. Rubber dirt seals
2. Trunnion bushing

Figure 12—Cross Section Through Upper Trunnion—Allow Approximately ¼" Clearance.

STEERING KNUCKLE SPINDLE AND PIN

1949 "600" and "Ambassador 6" Series

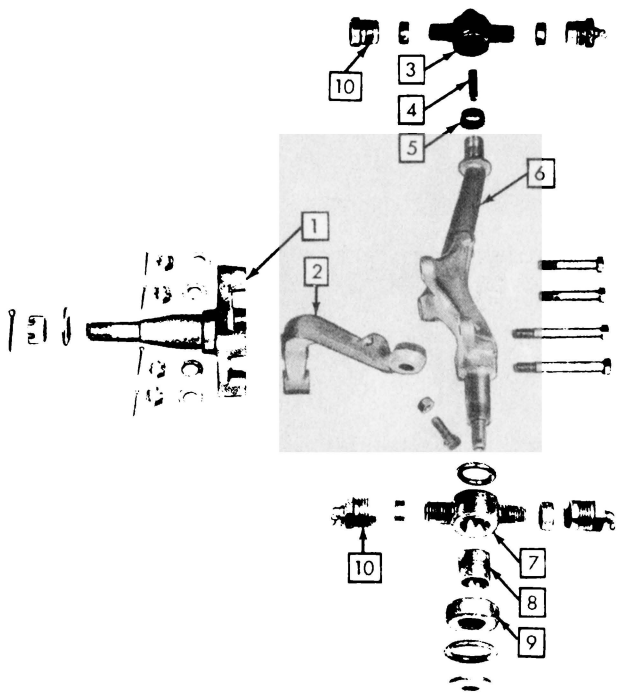
The steering knuckle spindle can be replaced without disturbing the wheel alignment settings. Gauge points are provided on the steering knuckle pin to check camber and caster, as shown in Figure 13.



1. Gauge points

Figure 13--Gauge Points on Steering Knuckle Pin to Check Camber and Caster.

The wheel spindle and steering arm are bolted to the steering knuckle pin, as shown in Figure 14.



1. Wheel spindle
2. Steering arm
3. Upper control arm trunnion
4. Upper control arm trunnion spring
5. Dirt seals
6. Steering knuckle pin
7. Lower control arm trunnion
8. Trunnion bushing
9. Thrust bearing
10. Threaded bushings

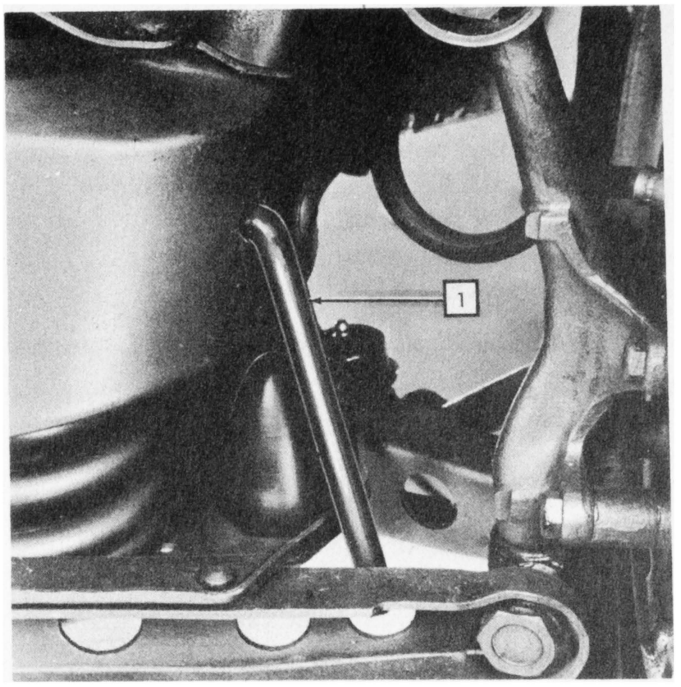
Figure 14—Steering Knuckle Pin Assembly.

To remove the steering knuckle pin from the upper and lower control arms, use spring holding hooks (J-2981) which will simplify the operation. Install the spring hook as shown in Figure 15. To do this, apply weight on the car to compress the spring until the hook can be installed in the lower control arm and into a hole provided in the front suspension extension.

STEERING ARMS

1949 "600" and "Ambassador 6" Series

Incorrect toe-in on the straight-away or incorrect toe-out on turns is, in many cases, due to bent steering arms. If bent these should be replaced with new steering arms as it is not advisable to try to straighten them.

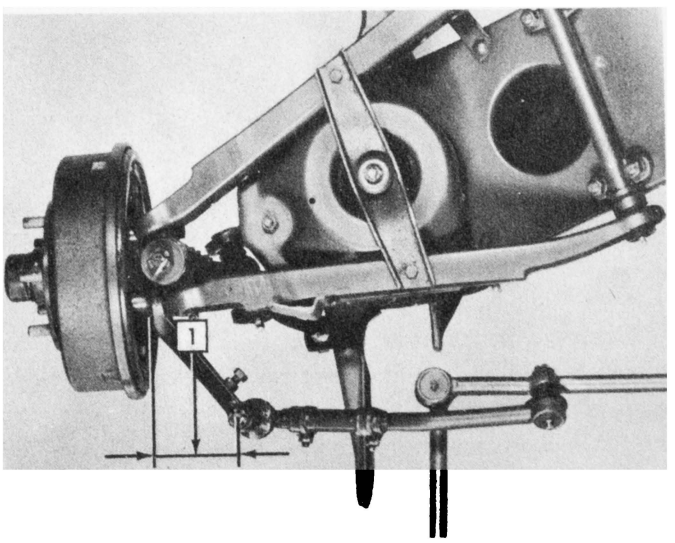


1. Tool J-2981

Figure 15—Spring Holding Hooks (J-2981) Used to Remove Steering Knuckle Pin or Trunnions.

To determine whether a steering arm is bent, place a straight-edge along the brake support plate and measure from the straight-edge to the center of the steering arm ball stud hole, as shown in Figure 16. This measurement should be $4\frac{3}{16}$" on the "600" Series and $4\frac{5}{16}$" on the "Ambassador 6" Series.

To remove the steering arm it will be necessary to remove the wheel spindle (Fig. 14).



1. $4\frac{3}{16}$" between the straight-edge and the center of the steering arm ball stud hole, on the "600" Series and $4\frac{5}{16}$" on the "Ambassador 6" Series

Figure 16—Check for Bent Steering Arms.

STABILIZER BAR

1949 "Ambassador 6" Series

A front stabilizer bar is used on the "Ambassador 6" Series only. Due to the greater weight of these cars, the bar (item 1, Fig. 2) is required to provide complete control of body roll.

FRONT WHEEL ALIGNMENT

1949 "600" and "Ambassador 6" Series

When the alignment factors vary considerably from the specifications, the result will be hard steering and abnormal tire wear. See Specifications on Page 13.

Caster

This type of suspension requires "C" washers to vary the relationship between the upper control arm inner pivot and the upper control arm frame bracket, as shown in Figure 17.

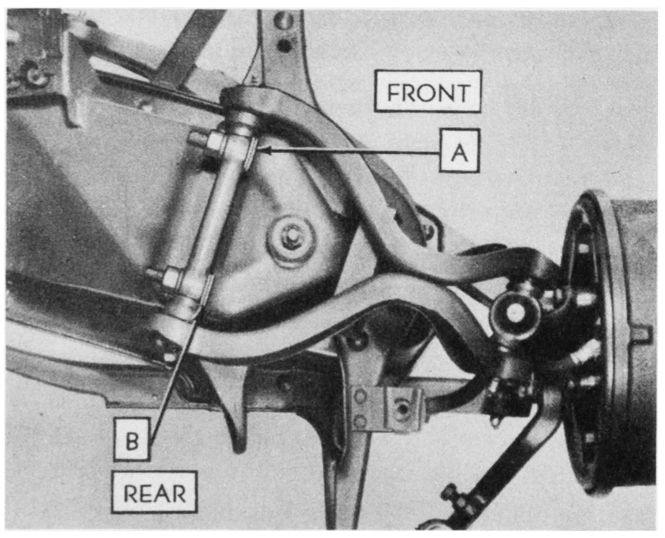
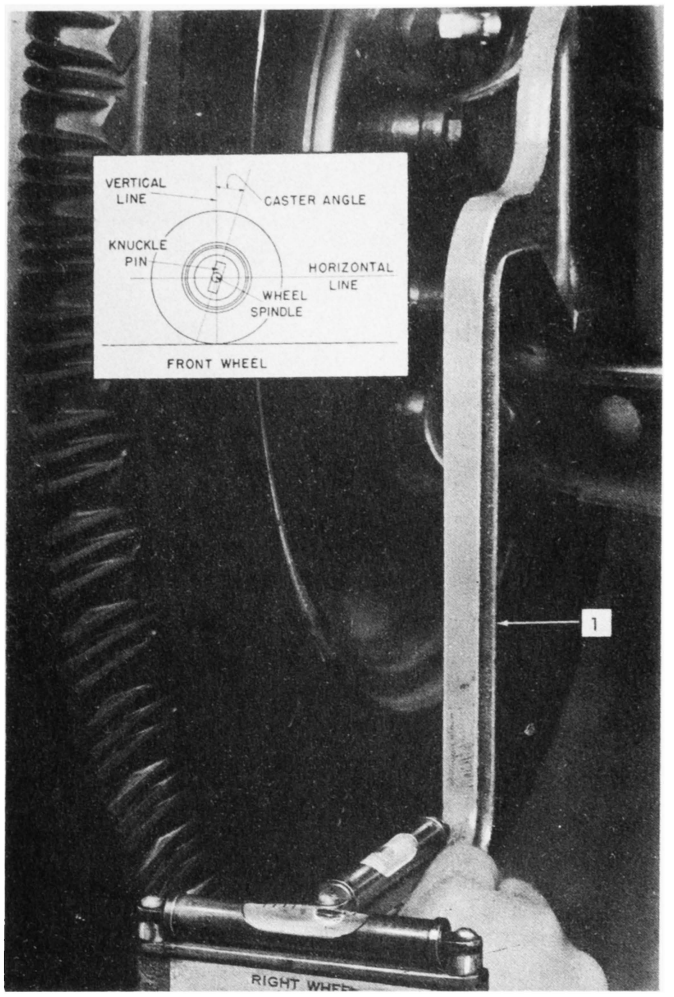


Figure 17—Caster and Camber Adjustments on these series are Made by Inserting and Removing "C" Washers at Points "A" and "B."

Caster and camber gauge (J-1377) is used to check caster, as shown in Figure 18. Place the gauge against the gauge points provided on the steering knuckle and read the caster angle on the caster scale of the gauge.

To adjust caster, simply loosen the nuts at the inner end of the pivot bar frame bracket screws and insert additional "C" washers either at point "A" or point "B". Adding washers at point "A" decreases the caster angle, and adding washers at point "B" increases the caster angle.



1. Caster and camber gauge (J-1377)

Figure 18—Gauge Points are Provided for Use With the Caster and Camber Gauge (J-1377).

"C" washers of 1/16" and 1/8" thickness are provided. Each 1/16" washer added represents a change of approximately 1/3 degree in the caster angle.

Camber

To check camber, use the caster and camber gauge (J-1377) as shown in Figure 18, taking the reading from the camber scale.

CAUTION: *Be sure that the gauge points on the steering knuckle are clean before using the gauge, and that the gauge is tight against the gauge points when the reading is taken.*

Camber adjustments on these series are very similar to the caster adjustments as shown in Figure 18. Loosen the two nuts at "A" and "B" on the inner end of the pivot bar frame bracket. Then, to decrease camber, add an equal number of "C"

washers both at points "A" and "B". To increase camber, remove an equal number of "C" washers both from points "A" and "B". By removing or adding the same quantities both at "A" and "B" you will change the camber as you wish without effecting the caster adjustment previously made.

Kingpin Angle

The angle of the kingpin on the "600" and "Ambassador 6" Series cannot be adjusted independently of camber. The angle is built into the steering knuckle pin. If it is incorrect after camber has been corrected, it means that some part, usually the steering knuckle pin, has been damaged and must be replaced.

Toe-In

The "600" and "Ambassador 6" Series have two tie-rods connected together by a steering linkage cross tube, as shown in Figure 19. To adjust toe-in, loosen the clamps at both ends of the adjusting tubes on each tie rod. Then with the wheels straight ahead and the steering gear in the mid position, turn the adjusting tubes in opposite directions.

To obtain the correct position of the steering wheel it is important that you always turn both tubes equally and in opposite directions. In other words, half of the toe-in dimension should be taken by each tie-rod. When the correct adjustment has been made tighten all clamp screws.

Toe-in is measured between the front tires at the front and rear, approximately 8" from the floor. The wheels should be from $\frac{1}{8}$" to $\frac{3}{16}$" closer together at the front than they are at the rear for the required toe-in setting, as shown in Figure 20.

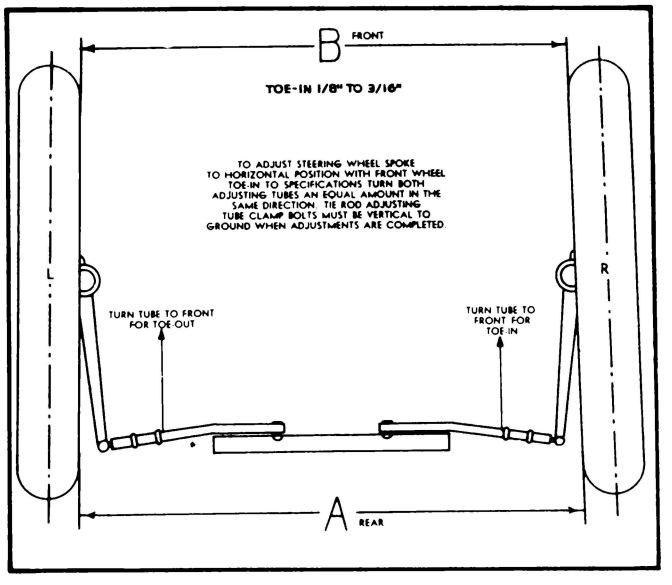
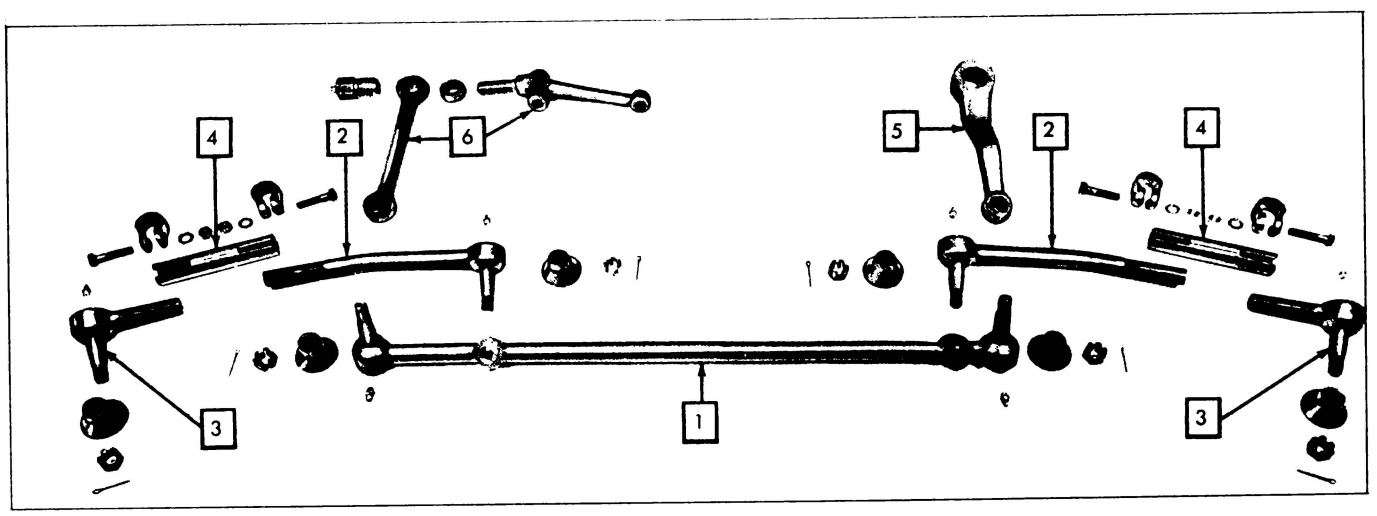


Figure 20—Toe-In Setting.

Toe-Out

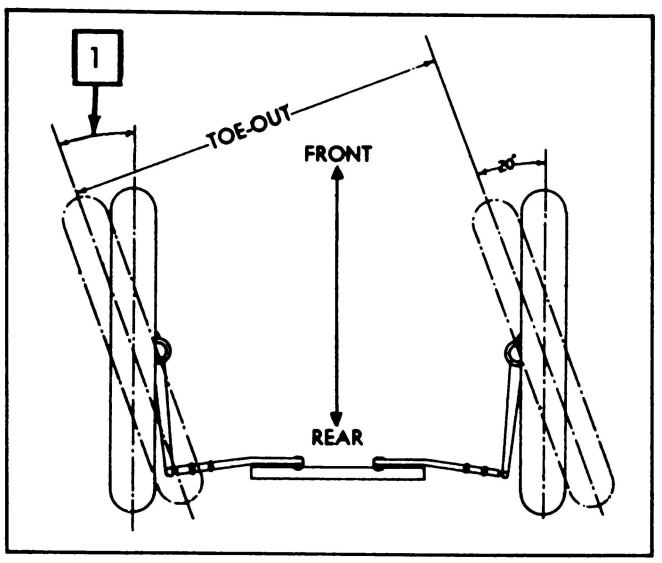
Toe-out is the ability of the front wheels of a car to turn and maintain parallel relationship with the rear wheels while in a turn.

Toe-out on turns is checked by placing the two front wheels, on turntables in the straight ahead position. (Toe-in has been checked and corrected.) Now turn the wheels to the right or the left, so that the wheel to be checked is on the inside of the turn.



1. Steering linkage cross tube
2. Steering tie rod
3. Steering tie rod end
4. Steering tie rod adjusting tube
5. Steering gear pitman arm
6. Steering gear idler arm and bracket

Figure 19—Steering Linkage Assembly Sequence—"600" Series Shown.



1. 23½ degrees for "600" Series;
   23 degrees for "Ambassador 6" Series.

Figure 21—Checking Wheels for Toe-Out on Turns.

Locate the outside wheel at 20 degrees as shown in Figure 21 and take the reading from the turntable on the inside wheel. This reading should be 23½ degrees, plus ½ or minus 0 degrees for the "600" Series and 23 degrees, plus ½ or minus 0 degrees for the "Ambassador 6" Series.

Readings on the inside wheel beyond the limits specified above indicate that the steering arm on the inside wheel is bent and should be replaced. Since the relationship of toe-out is fixed, no *adjustment* can be made.

Turning Angle

1949 "600" and "Ambassador 6" Series

An adjusting screw and plate, or stop bracket, is located on the lower control arm. This screw provides for the adjustment of normal turning radius. This plate is shown in Figure 10, page 5.

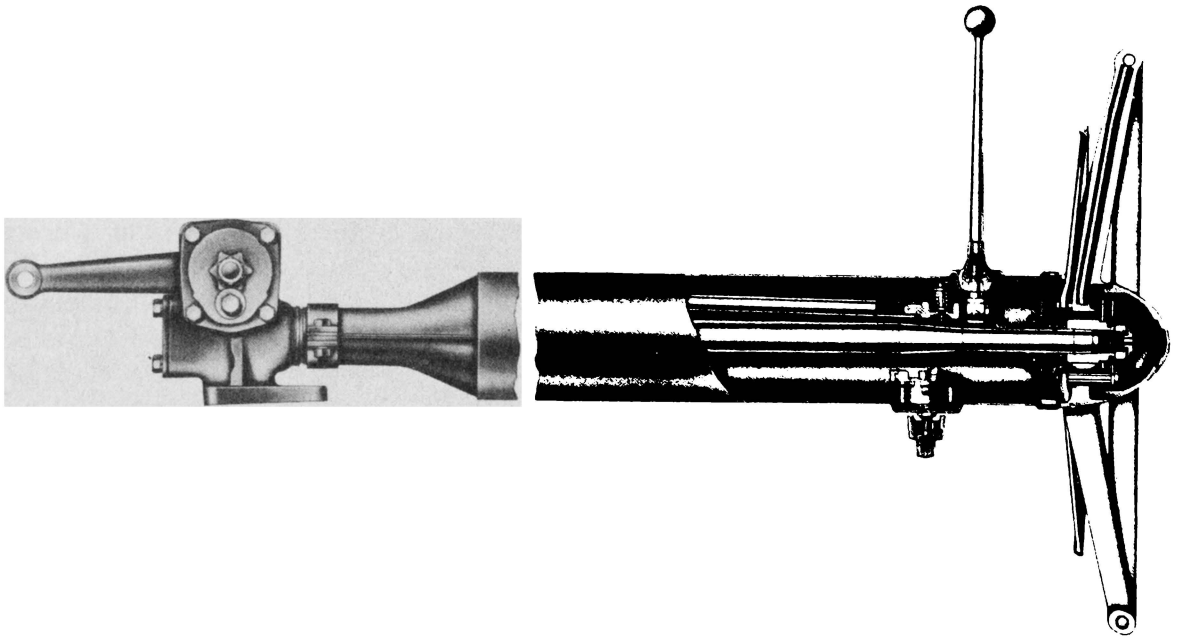


Figure 22—1949 "600" and "Ambassador 6" Series Steering Gear Cross Section.

STEERING GEARS

1949 "600" and "Ambassador 6" Series

This steering gear is of the worm and roller type, having a gear ratio of 18.2 to 1.

External adjustments have been provided to eliminate all play within the steering gear.

Before making any adjustments, jack up the front wheels of the car and inspect for looseness all other parts affecting the steering, such as ball sockets, wheel bearings or king pin bushings. Then make the following tests:

WORM BEARING ADJUSTMENT

1949 "600" and "Ambassador 6" Series

Turn the steering wheel to the right about one turn from the straight ahead driving position. Secure the steering wheel in this position to prevent any movement while the front wheels are shaken for end play.

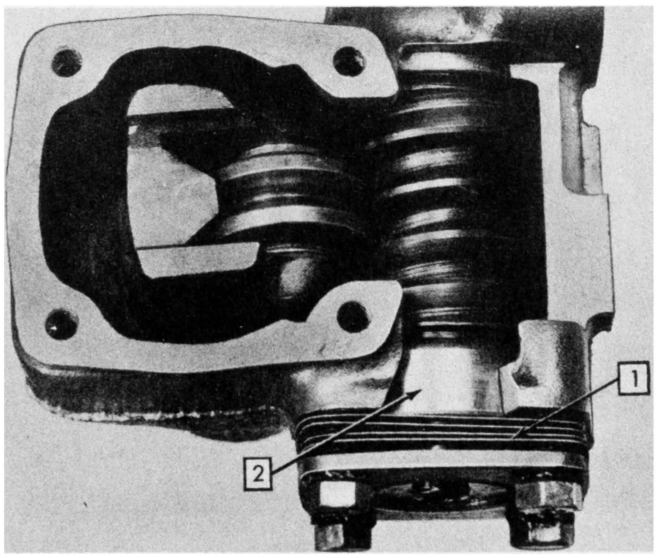
To determine the end play, have a helper vigorously shake the front wheel sideways. End play can be felt between the steering wheel hub and the top of the steering jacket tube.

CAUTION: *Be sure that the end play that you feel is not play or a give in the steering jacket bearing.*

If end play exists, the bearings need adjustment. This adjustment should be made before any further inspection of the steering gear is made.

To adjust the bearings loosen the four cover cap screws about ⅛ inch (Fig. 23). Use a knife to separate the top shim, passing the blade all the way around between the shims, taking care not to mutilate the remaining shims. Remove the top shim, and inspect again for end play. Remove only one shim at a time between inspections. Care should be taken not to set up stiffness in worm bearings.

It is important that the drag link be removed from the steering gear ball arm in order to effect satisfactory adjustments and alignment of the gear in the car.



1. Shims
2. Steering gear worm roller bearing

Figure 23—Steering Gear Housing Lower Cover Adjusting Shims.

Now revolve the steering wheel to determine if any stiffness exists. If so, either too many shims have been removed or the gear is misaligned in the car.

STEERING GEAR ALIGNMENT IN THE CAR

1949 "600" and "Ambassador 6" Series

Loosen the mounting bolts just enough to allow the gear to shift on the frame and line up at the angle determined by the height setting of the jacket tube bracket. Then retighten the frame bracket bolts. Now loosen the jacket tube bracket, allow it to shift to match the gear column position, and retighten.

INSPECTION FOR THE PROPER MESH OF THE CROSS SHAFT ROLLER IN THE WORM

1949 "600" and "Ambassador 6" Series

Never make inspection for proper mesh without first correcting the steering gear alignment.

Turn the steering wheel to the midposition of its complete travel or turning limits. (Drag link previously disconnected.)

When the steering wheel is in the midposition the two spokes will be an equal distance from a horizontal position, and the steering gear will be on the high point of the worm and roller. If the steering wheel is removed, the high point of the worm and roller is also indicated by the wide serration at the top of the steering gear tube, pointing straight down.

With the steering gear in the midposition, shake the pitman arm to determine the amount of lost motion. If this exceeds 1/32", adjust the roller shaft.

NOTE: *Before the drag link is again connected to the steering gear pitman arm, swing the front wheels through their full turning radius to determine if there are any tight spots. There should not be more than 10 lbs. pull on the drag link when making this test.*

CROSS SHAFT ROLLER MESH IN THE WORM

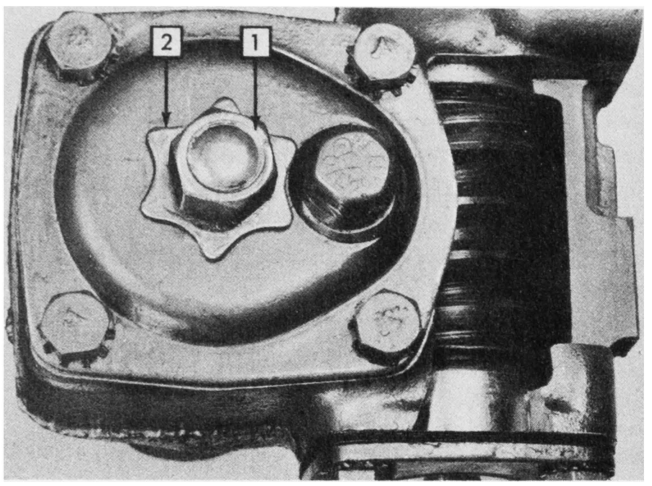
1949 "600" and "Ambassador 6" Series

Adjustments for closer mesh of the steering gear cross roller with the worm are made by tightening the outside cross shaft adjusting screw.

To make this adjustment remove the lock nut and lock plate shown in Figure 24. Now with the

steering wheel in the midposition (straight ahead) and the drag link disconnected, tighten the adjusting screw just enough to remove the play between the cross shaft roller and the worm.

Check the amount of play at the end of the pitman arm and DO NOT OVER-TIGHTEN.



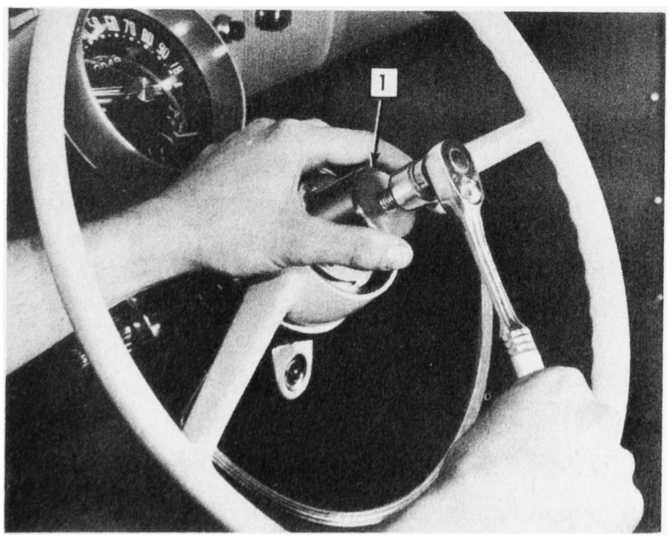
1. Lock nut
2. Lock plate

Figure 24—Remove the Lock Nut and Lock Plate to Adjust the Mesh of the Cross Shaft Roller With the Worm.

REMOVING A STEERING GEAR FROM THE CAR

1949 "600" and "Ambassador 6" Series

Pull the steering wheel, using puller J-2982 as shown in Figure 25.



1. Puller J-2982

Figure 25—Remove the Steering Wheel, Using Puller J-2982.

Remove the shift rods from the shift levers. Then disconnect the steering jacket tube bracket at the dash panel, and loosen the clamp bolt at the lower end of the jacket tube. With the jacket tube loosened turn it approximately 90° to the right to prevent contact with, and damage to, the instrument panel overlay while withdrawing the steering gear. Disconnect the pitman arm from the steering gear cross shaft and the tie rod on the left side.

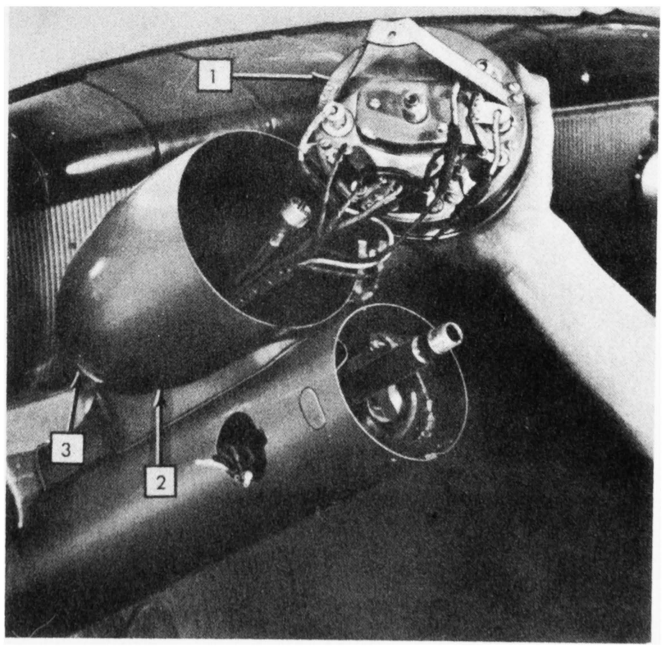
With the front of the car in a raised position, disconnect the steering gear housing from the body side sill and remove the steering gear assembly from below.

REMOVING THE STEERING GEAR JACKET TUBE

1949 "600" and "Ambassador 6" Series

To remove the steering gear jacket tube, first remove the battery ground wire, then remove the horn blower parts as outlined in the Electrical Section. Pull the steering wheel using puller J-2982. Now remove the light and ignition switches, and the gear shift lever as outlined in the Shifting Section.

Remove the screws from the dust shield at the floor board and pull the dust shield up on the jacket tube.



1. Instrument cluster
2. Instrument cluster housing
3. Cap screw

Figure 26—Separate the Instrument Cluster from the Housing.

The instrument cluster and housing can be separated from the steering jacket tube by removing the cap screw from the rear of the instrument housing (Figure 26). This will permit the instrument cluster to be pulled from the housing. Then disconnect the speedometer cable. Remove the two nuts from the inside of the housing, as shown in Figure 27.

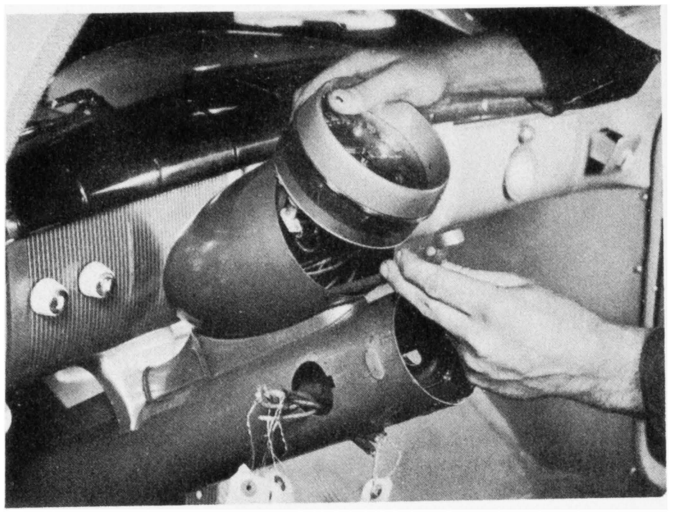
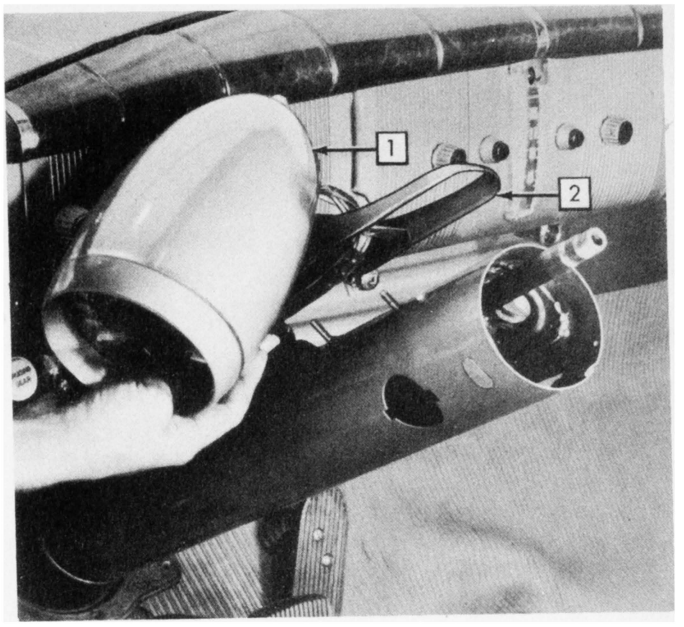


Figure 27—Remove Two Nuts from Inside Housing.

Now put the instrument cluster back into the housing to retain it as a complete assembly. Remove the two Phillips screws from the bottom of the wire harness shield. These screws are at the bottom of the steering gear jacket tube, reached from under the hood.

Disconnect the steering jacket tube support bracket from the dash panel and remove the bracket. The entire instrument cluster housing and wire harness shield can now be lifted away from the jacket tube and laid aside as shown in Figure 28.

To replace the wire harness shield it will be necessary to disconnect the instrument gauge cluster wiring.



1. Instrument cluster housing
2. Wire harness shield

Figure 28—Lift the Instrument Cluster Housing and Wire Harness Shield Away from the Jacket Tube.

Disconnect and remove the operating shift levers as outlined in the Shifting Section, and loosen the clamp bolt at the bottom of the steering gear jacket tube.

The jacket tube can be lifted upward through the rubber dust shield, up and over the steering gear tube.

INSTALLING A STEERING GEAR JACKET TUBE

1949 "600" and "Ambassador 6" Series

Reverse the procedure for removal. However, when installing the steering gear jacket tube to dash panel support bracket bolts, use care to see that the heads of the bolts do not pinch the wiring behind the dash panel.

SPECIFICATIONS

	"600" Series	*"Ambassador 6" Series*
Turning Angle	23½°+½°—0°	23°+½°—0°
King Pin Angle	8½°	8½°
Caster Angle	0° to ½° Pos.	0° to ½° Pos.
Camber Angle	¼° Neg to ¼° Pos.	¼° Neg to ¼° Pos.
	0° desired	0° desired
Toe-In	⅛" to 3/16"	⅛" to 3/16"

RUNNING GEAR SECTION



Nash TECHNICAL SERVICE MANUAL

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September 1, 1948

RUNNING GEAR SECTION

NASH TECHNICAL SERVICE MANUAL

COIL SPRINGS

SPRINGS

1949 "600" and "Ambassador 6" Series

Coil springs are used on both front and rear of these Series Nash cars. These springs are insulated from contact with the axle and the body by rubber cushions which prevent the transmission of road noises to the body.

Front Coil Springs

1949 "600" and "Ambassador 6" Series

The front coil springs are interchangeable on the same series only. It is important that the free height of a coil spring be checked as well as the height under a load.

Front Coil Spring Specifications

Series	Free height	Loaded height	Rate pounds per inch after load weight
"600"	13 1/16"	9" at 1640# plus or minus 40#	418#
"Ambassador 6"	13 3/8"	9" at 1830# plus or minus 40#	418#

NOTE: Front coil springs are interchangeable within each series only.

The limits referred to above in connection with the loaded height are identified by one grind mark for the low limit, and two grind marks for a high limit spring. These grind marks will be found on the end of the coil spring.

Installing Front Coil Springs

1949 "600" and "Ambassador 6" Series

If a pair of springs, one of a low limit (one grind mark) and the other a high limit (two grind marks) are used on the same car, install the high limit spring on the left, or driver's, side of the car as most cars are driven with only the driver load.

Rear Coil Springs

1949 "600" and "Ambassador 6" Series

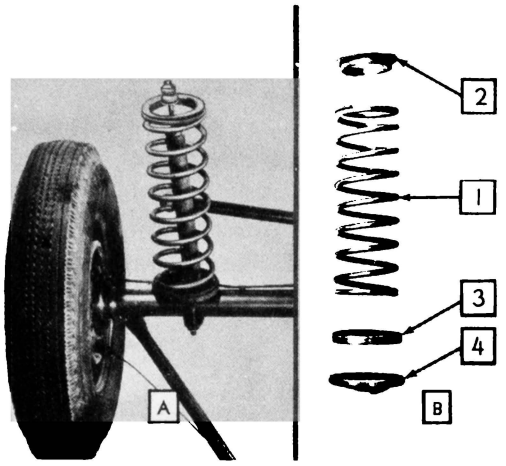
Rear Coil Spring Specifications

Rear Coil Spring	Standard	Export
Free Height	16 3/4"	15 1/2"
Loaded Height	9 13/16" under load of 870 lb. ± 25 lb.	10 17/32" under load of 870 lb. ± 25 lb.
Spring Rate per Inch	125 lb.	175 lb. ± 5 lb.

Removing the Rear Coil Springs

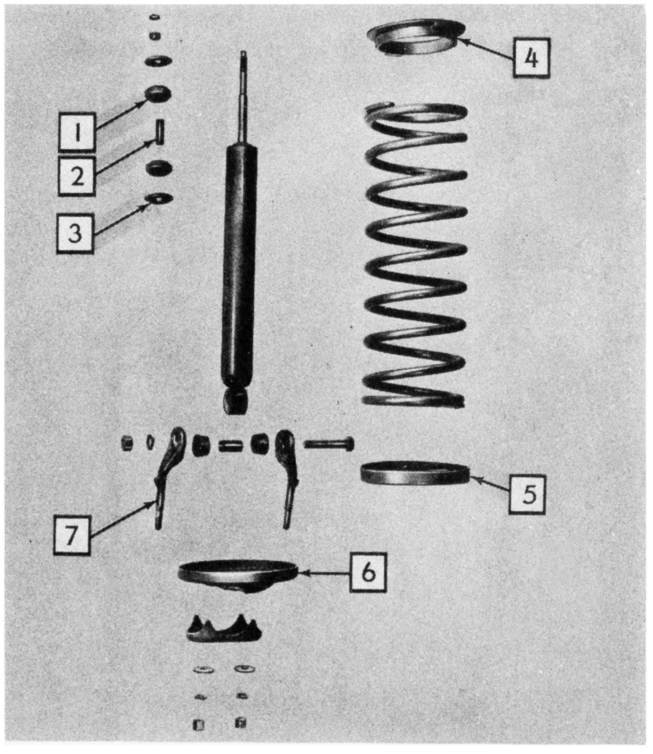
1949 "600" and "Ambassador 6" Series

To remove the rear coil springs it will be necessary to lift the rear of the body until all the weight of the body is removed from the springs. Then remove the two nuts from the lower end of the shock absorber bolts at the rear axle. Next, raise the body until the axle allows the shock absorber bolts to be freed. Remove the lower spring saddle and swing the spring, shock absorber and lower spring seat free of the axle, then lower the spring. Figure 2 shows the parts in sequence of removal.



1. Rear spring
2. Rear spring seat cushion—upper
3. Rear spring seat cushion—lower
4. Rear spring seat

Figure 1—(A) Rear Spring Mounting, "Ambassador 6" Series Shown. (B) Rear Spring Assembly Sequence.



1. Shock absorber grommet—upper
2. Shock absorber grommet spacer
3. Shock absorber grommet seat
4. Rear spring seat cushion—upper
5. Rear spring seat cushion—lower
6. Rear spring seat
7. Shock absorber bolt

Figure 2—Spring and Shock Absorber Assembly Sequence.

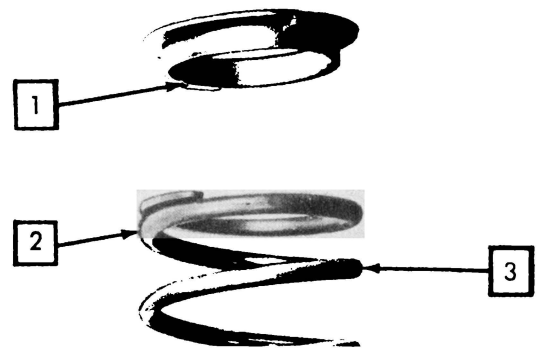
Installing Rear Coil Springs

1949 "600" and "Ambassador 6" Series

In the installation of the rear coil springs, a rubber spring cushion is used at the upper and lower ends of the spring. This cushion has a rubber tab which must be inserted between the stationary coil of the spring and the first movable coil. The cushion is installed as follows: First place the projection or tab (item 1, Figure 3) down through the stationary coil of the spring so that it rests between the stationary coil and the first movable coil (items 2 and 3, Figure 3).

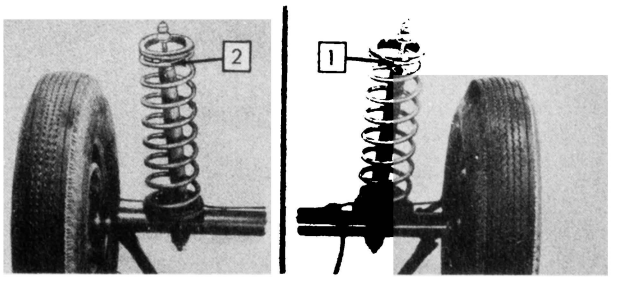
Next, turn the spring seat cushion until the flat end of the stationary coil is tight against the shoulder of the tapered projection on the spring seat cushion, as shown in item 1, Figure 4.

With this installation the rubber tab on the spring seat cushion prevents metal-to-metal contact between the first closed coils of the spring during operation.



1. Lower projection of the upper rear spring seat cushion
2. Upper stationary coil of the spring
3. First movable coil of the spring

Figure 3—Installing Upper Cushion and Spring.



1. Tapered projection at the top of the spring seat cushion
2. Lower projection of the upper rear spring seat cushion between the stationary coil and the first movable coil

Figure 4—Upper Rear Spring Seat Cushion Installed.

SHOCK ABSORBERS

SHOCK ABSORBERS

1949 "600" and "Ambassador 6" Series

All shock absorbers, front and rear, are the direct, double acting, telescoping type. The end mountings of the shock absorbers are retained in rubber grommets at both ends, as shown in Figures 2 and 5.

Shock Absorber Inspection

Shock absorbers should be inspected for fluid leaks and for uniform operation. Both front and rear shock absorbers are mounted inside the coil springs. If the shock absorber shows signs of a fluid leak, the unit should be replaced.

When the shock absorber has been removed from the car for examination, place it in a vise, in approximately the same position as it is mounted in the car. Now work the unit up and down for its full stroke a few times to remove all of the air from the pressure cylinder. After the air has been removed, work the shock absorber up and down slowly, through its full stroke. The shock absorber should move through the full stroke with the same amount of pressure. If the movement is erratic (fast and then slow), the shock absorber should be replaced.

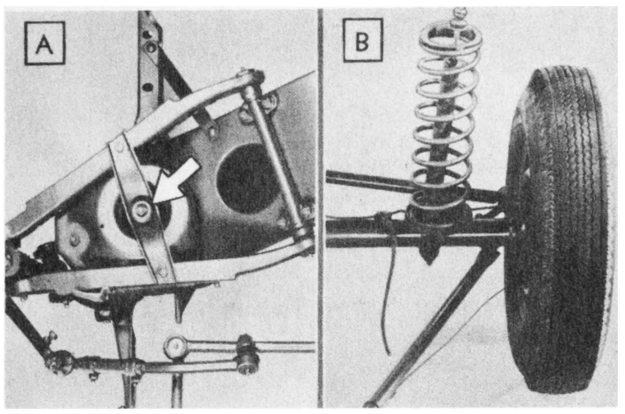
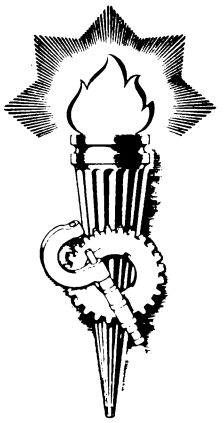


Figure 5—(A) Front Shock Absorber Mounting. (B) Rear Shock Absorber Mounting.

HOODS FENDERS - BUMPERS SECTION



Nash

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HOODS – FENDERS – BUMPERS SECTION

NASH TECHNICAL SERVICE MANUAL

HOODS

DESCRIPTION

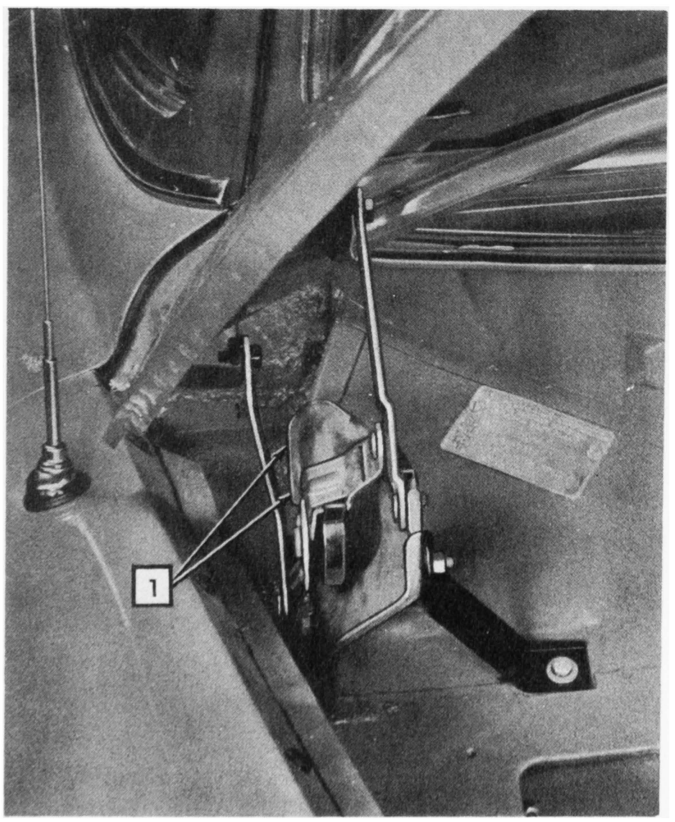
1949 "600" and "Ambassador 6" Series

The hood is of two-piece construction and is serviced as right and left hand sections.

Hood Alignment

1949 "600" and "Ambassador 6" Series

To correct the alignment of the hood, loosen the hinge to body cap screws (Fig. 1) and tap the hinge in the direction required for adjustment.



1. Hinge to body cap screws.

Figure 1—Hood Hinge.

Too Large an Opening Between the Hood and Fenders

1949 "600" and "Ambassador 6" Series

To correct, loosen the fenders and grille supports and shift the assembly to equalize the openings between the hood and fenders. Clearance has been

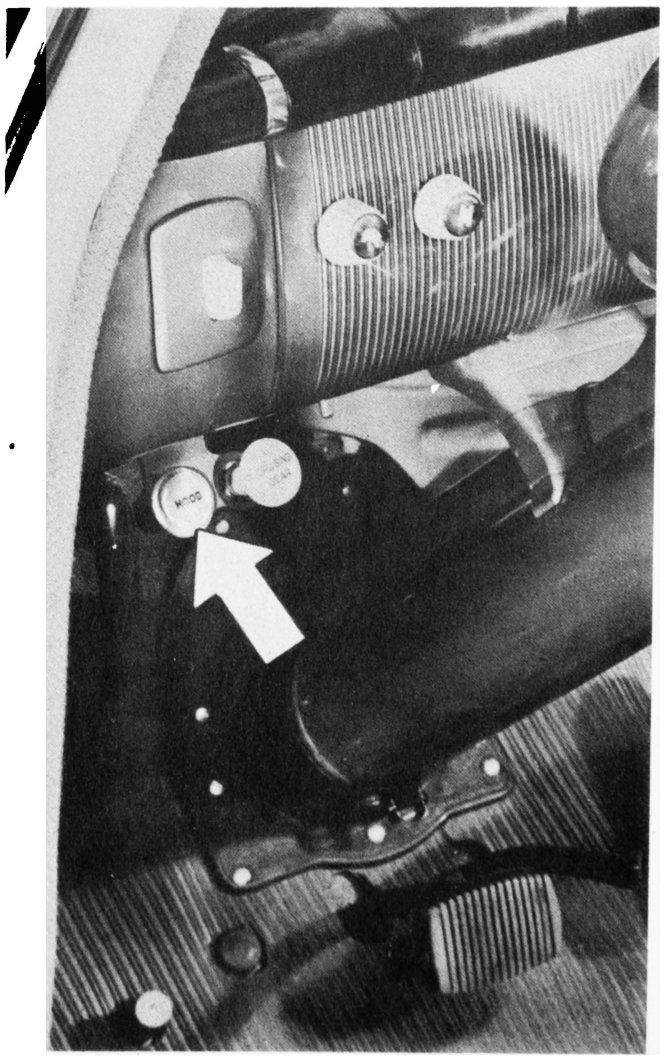


Figure 2—Hood Control Knob.

provided in the bolt holes to allow for the alignment of the hood.

Hood Control

1949 "600" and "Ambassador 6" Series

To raise the hood it is necessary to pull out on the control button at the instrument panel (Fig. 2). This releases the hood lock, allowing the hood to rise against the safety catch.

Hood Control Adjustment

1949 "600" and "Ambassador 6" Series

To adjust the hood control cable, place the lock lever and cable in full locked position. Now adjust the control wire pellet, placing the radius of the pellet against the chamfered radius of the hole in the lock lever.

Lubriplate should be applied to all friction areas.

FENDERS

FRONT FENDERS

1949 "600" and "Ambassador 6" Series

The front fenders are of one-piece construction. In case of severe damage, a front fender can be removed as a single unit or the two front fenders with the radiator grille can be removed as a complete assembly, as shown in Figure 3.

Removing a Front Fender

1. Remove the parking lamp and frame assembly by removing the three nuts from underneath the fender. Allow the parking lamp to hang on the wires but protected from scratching the fender.
2. Remove the headlamp door and headlamp body assembly from the fender and grille assembly.

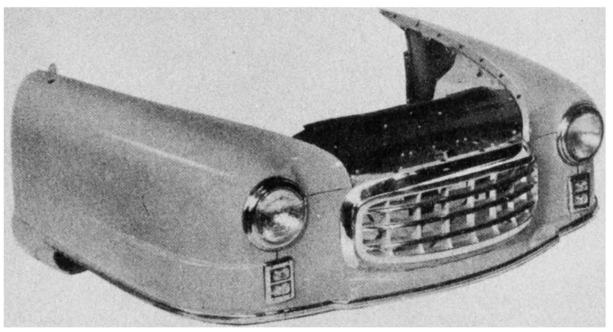
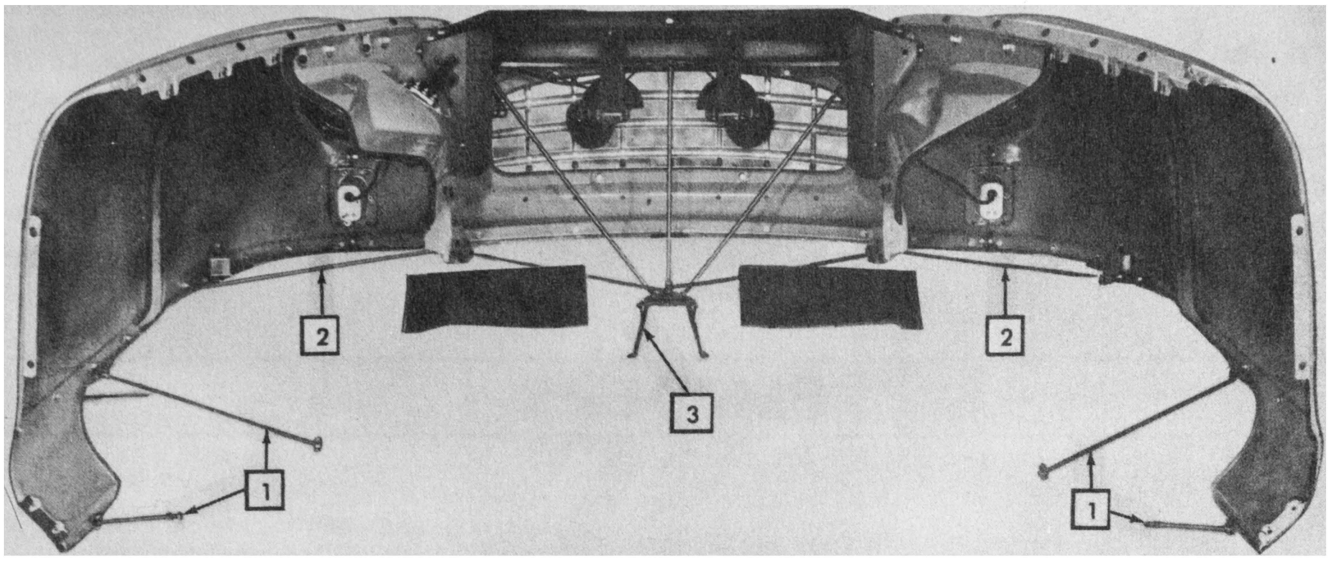


Figure 3—Front Fender and Radiator Grille Assembly.

3. If the car has a radio, disconnect the antenna lead at the antenna and remove the antenna from the mounting bracket.
4. Remove the mounting nut and seal from the top of the fender and pull the antenna down through the fender.
5. Disconnect the front fender brace rods, and the brace rod which is attached to the front bumper.
6. Remove the screws that fasten the fender to the grille panel.
7. Remove the upper radiator baffle from the wheel house panel extension.
8. Disconnect the front sheet metal brace rod at the fender and cross tie plate.
9. Remove the screws that fasten the fender to the body pillar and the front wheel house panel. Remove the fender from the car.

Removing Front Fender and Grille Assembly

1. Disconnect the hood cable from the release lever and pull the cable through the grommets at the side of the left fender.
2. Remove the battery and battery box.
3. Disconnect the horn leads at the horn relay and the head and parking light leads at the junction on the left front wheel house extension panel.
4. Disconnect the antenna lead at the antenna and remove the antenna from the mounting bracket at the right wheel house panel.
5. On the "Ambassador 6" Series, the auxiliary radiator tank must be removed.
6. On both the "600" and "Ambassador 6" Series, disconnect the radiator core at the top by removing the radiator to cross tie plate screw.



1. Front fender skirt brace rods.
2. Front fender to bumper brace rods.
3. Front sheet metal brace rod and bracket.

Figure 4—Front Fender and Grille Assembly with Attaching Parts.

7. Disconnect the two front fender skirt brace rods from the brackets on the right and left wheel house panel (item 1, Fig. 4).
8. Disconnect the front fender brace rods at the bumper ends (item 2, Fig. 4).
9. Disconnect the front brace rods from the lower brace rod bracket (item 3, Fig. 4).
10. Remove the screws that fasten the rear of the fender to the body pillar (both sides).
11. Remove the screws that fasten the fenders to the wheel house panels (both sides).
12. Remove the wheel house panel extension mounting screws (both sides).
13. Lift the complete assembly off the car.

REAR FENDERS

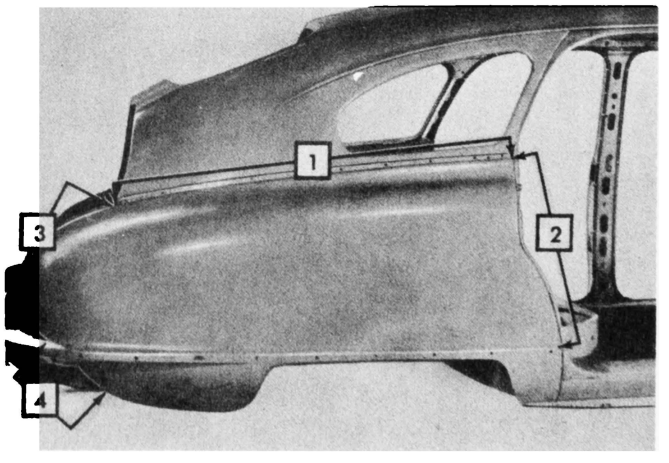
1949 "600" and "Ambassador 6" Series

The rear fenders are spot welded and bolted to the body, forming an integral part of the body. They can be removed and replaced in service if it becomes necessary to replace a fender.

This fender is spot welded to the rear quarter panel, along the belt molding line (item 1, Fig. 5).

The front of the fender is spot welded to the rear quarter body pillar side facing as far down as the inside flange of the running board apron (item 2, Fig. 5).

The rear of the fender is welded to the rear quarter side panel, from the belt molding line



1. Spot welded along the belt molding line.
2. Front of the fender spot welded to rear quarter body pillar.
3. Rear of the fender welded to the rear quarter side panel.
4. The fender skirt is welded to the body.

Figure 5—Rear Fender Welds.

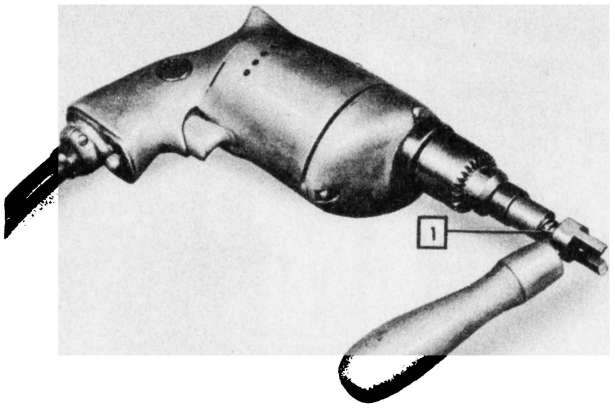
down the rear deck cover opening as far as the rear deck lower panel.

The rear bottom edge of the fender skirt is welded to the body (item 4, Fig. 5).

Removing a Rear Fender

1949 "600" and "Ambassador 6" Series

1. Remove the rear seat cushion, rear seat back, rear quarter ventilator, rear quarter side arm rest and rear quarter trim panel.
2. Remove the rear bumper assembly.
3. Remove the belt molding and the belt molding retainers.
   A. The belt molding can be lifted off the belt molding retainers. Start at the door opening.
   B. Remove the screws that fasten the retainers to the body.
4. Remove the two screws that fasten the rear of the fender to the lower rear deck panel.
5. Connect the end milling tool J-3041 to an electric drill and mill out the spot welds along the belt molding as shown in Figure 6.



1. Milling Tool J-3041

Figure 6—Use Milling Tool J-3041 to Mill Out Spot Welds.

CAUTION: When milling out a spot weld, mill through one thickness of metal only. Do not force the milling tool beyond the thickness of the fender metal.

6. Mill out the spot welds at the other places where the fender is welded to the body. Then remove the fender from the body.

CAUTION: *It may be necessary in some cases to remill some of the spots where the spot welds are still holding. Do not force the fender if the weld is not broken as you may distort the rear quarter panel for the installation of the new fender.*

Installing a New Rear Fender

1949 "600" and "Ambassador 6" Series

Before installing a new rear fender make sure that the surface where the fender contacts the body is smooth and clean. Apply suitable weld primer to the mating surfaces where the fender is to be welded. Also apply a coating of Nash Body Sealer along the belt molding line.

1. Place the new fender up into position, using drifts or dowel pins to support its weight. There are three ¼" locating holes in the fender and in the rear quarter panel provided for this purpose.
2. Install the two screws that fasten the rear of the fender to the rear lower deck panel.
3. Clamp the front of the fender to the rear quarter body pillar.

   CAUTION: *Check at this point to see that the fender is in alignment with the body at all points.*
4. Place marks approximately 2½" apart between the holes provided in the fender for the belt molding retainer screws.

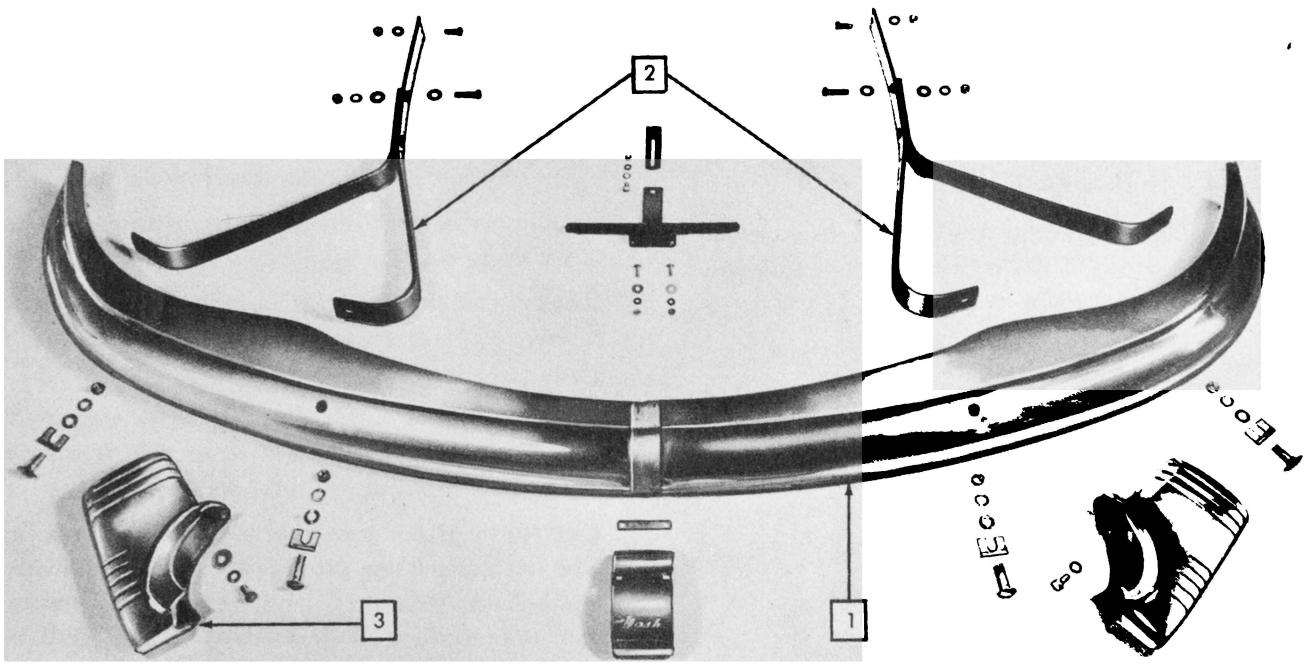
   CAUTION: *Make sure that these marks are in line with the holes provided in the fender for the belt molding retainer screws. These marks are the centers of the holes to be drilled through the fender and body.*
5. Drill a 3 16" hole at each one of the marks along the belt molding. Drill through the fender and the body metal.
6. Rust-protected screws, flat washers, lock washers and nuts with rubber seal washers will be provided with each service fender.

   Insert the screws from the outside and draw up enough to draw the fender up to the body.
7. Use "C" clamps to draw the rear of the fender up so that the trunk and the fender sealer rubber flanges are spaced the width of the sealer rubber. This forms the channel for the rubber sealer. Spot weld the inside of this channel.

CAUTION: *Take utmost care to keep the heat at a minimum while welding sheet metal parts. Wet asbestos putty should be used to protect the body metal around the areas to be welded.*

8. Weld the front of the fender to the rear quarter body pillar. This weld is from the belt molding down to the bottom of the fender flange.
9. After the new fender is painted, apply sufficient Nash Body Sealer on the underside of the fender and body over the entire area where the fender contacts the body.
10. Replace the belt molding retainers, belt molding, lower fender molding and bumper assembly.
11. Replace the trim panel, arm rest assembly, rear quarter ventilator and rear seat back and cushion.

BUMPERS



1. Bumper bar.
2. Back bar assembly.
3. Bumper vertical bars.

Figure 7—Front Bumper and Back Bar Assembly Shown.

FRONT AND REAR BUMPERS

1949 "600" and "Ambassador 6" Series

The front bumper is a heavy one-piece steel stamping, chrome-plated, fastened to the front of the body frame by two back bars as shown in Figure 7.

WEATHER EYE— SPEEDOMETER— INSTRUMENT PANEL SECTION



Nash

TECHNICAL SERVICE MANUAL

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- Defroster Control 2
- Cowl Ventilator 2
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- Winter Operation 3
- Windshield Defrosting 3
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- Heater Control Valve Removal 5

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INSTRUMENT GAUGES 8

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September 1, 1948

WEATHER EYE—SPEEDOMETER—INSTRUMENT PANEL SECTION

NASH TECHNICAL SERVICE MANUAL

WEATHER EYE

GENERAL

The Nash Weather Eye is designed to provide comfortable temperatures within the car for both summer and winter driving.

The satisfactory functioning of the Weather Eye in winter is dependent upon the temperature of the coolant in the cooling system of the engine.

CONTROLS

"H" Control Knob (Water Control Valve)

The control shaft with its knob is mounted on the instrument panel and is connected to the water control valve. This control knob actuates the valve, thereby controlling the amount of coolant permitted to pass through the heater core.

A thermostat is incorporated in the valve. It has a flexible capillary control tube leading from a small gas-filled chamber and bellows. The tube leads to, and terminates at, a coil mounted on the driver's side of the dash below the heater core.

NOTE: *When the "H" control knob is in the wide-open position or in the fully closed position, the thermostat is cut out. The automatic control operates only between the ¼ open and ¾ open positions.*

"D" Control Knob (Defroster Fan)

This control knob is identified by the letter "D" and is located adjacent to the "H" control knob. This knob controls the 5-way electrical defroster switch.

The center or straight up and down position of this control knob is "Off".

The first stop to the left (counter-clockwise) causes the *defroster fan* to operate at *low speed.*

The second stop to the left causes the *defroster fan* to operate at *high speed.*

The first stop to the right (clockwise) causes the *heater fan* to operate at *high speed,* while the second stop to the right causes the *heater and defroster fan* to operate at *low speed.* See diagram (Fig. 1).

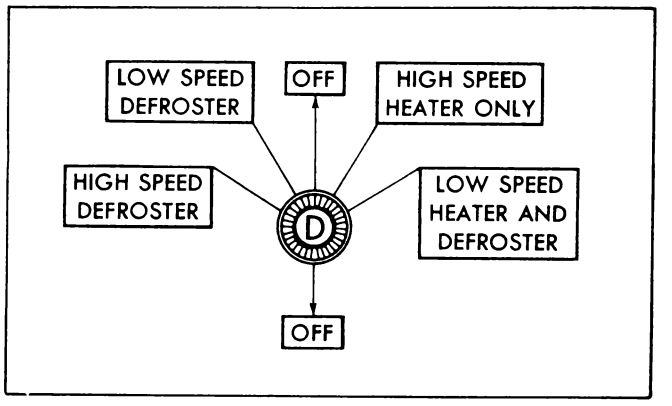


Figure 1—Diagram of "D" (Defroster Switch) Operation.

Cowl Ventilator Control Lever

This lever is located under the instrument panel in the approximate center of the car. It operates the cowl ventilator cover, which should be open at all times *except* when the car is being washed (Fig. 2).

SUMMER OPERATION

When heat is not required, the control valve marked "H" is turned to the "off" position. With the cowl ventilator control in the "open" position fresh air continues to be filtered and circulated within the car. While driving slowly or in heavy traffic the heater fan may be operated to increase the air circulation.

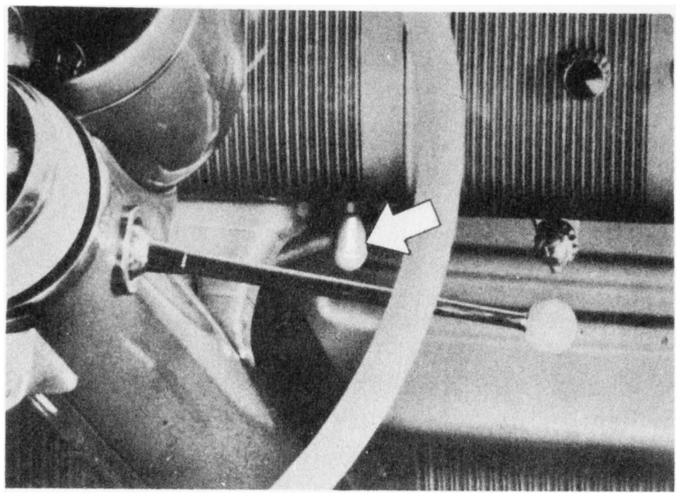


Figure 2—Cowl Ventilator Control Lever.

WINTER OPERATION

The Weather Eye will provide warm air *after* the engine has warmed up sufficiently to heat the coolant in the cooling system.

Operation at Low Car Speeds or in Heavy Traffic

For the best results under these conditions, turn "D" control knob (defroster switch) to the first stop to the right, for high speed heater fan operation (Fig. 1).

Windshield Defrosting

Air is conveyed to each side of the windshield through an air duct which is connected to the defroster fan. The amount of air is controlled by the "D" control knob. Turn "D" control knob to the left (counter-clockwise) to the first stop for normal air volume and to the second stop for high air volume (Fig. 4).

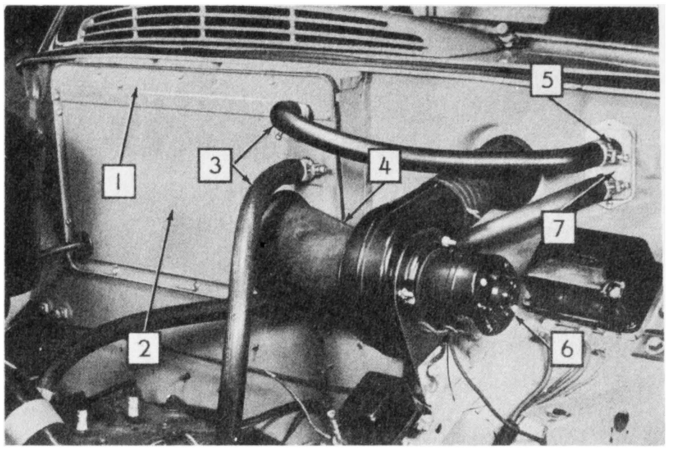
Removing and Replacing Sub-Assemblies

For identification and location of Weather Eye assembled parts see Figure 3.

Air Filter Removal and Installation

Remove the upper air conditioner box cover, and pull out the filter (Fig. 4). Reverse this procedure for air filter installation.

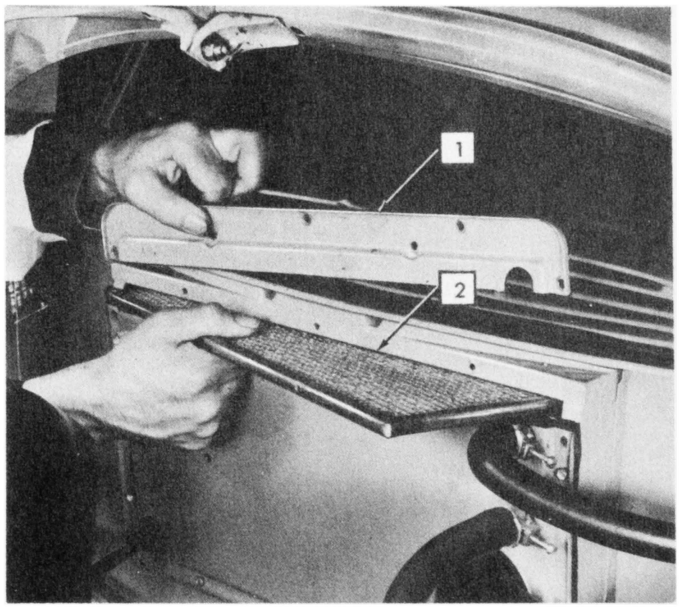
NOTE: *It is recommended that the air filter be changed every six months for best results.*



1. Air conditioner upper box cover
2. Lower air conditioner box cover
3. Heater hoses
4. Defroster boot
5. Heater control valve
6. Defroster fan
7. Heater valve insulator retainer

Figure 3—Weather Eye Assembled Parts.

The chemically-treated fibers in the air filter prevent dust and dirt from entering the heater core. They eventually become clogged and prevent a sufficient amount of air from entering.



1. Air conditioner box upper cover
2. Air filter

Figure 4—Removing Air Filter.

Heater Core Removal and Installation

Remove the defroster boot. Disconnect the windshield wiper hose and the heater hoses from the heater core. Then remove the upper and lower air

conditioner box cover and the heater core shell plate. Remove the heater core (Fig. 5).

To install the heater reverse removal procedure.

CAUTION: *Be sure all gaskets are intact and in place.*

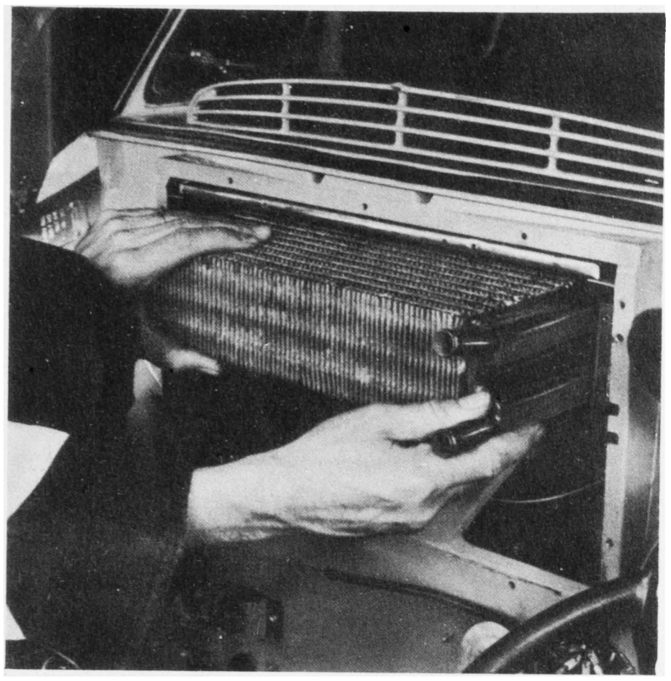
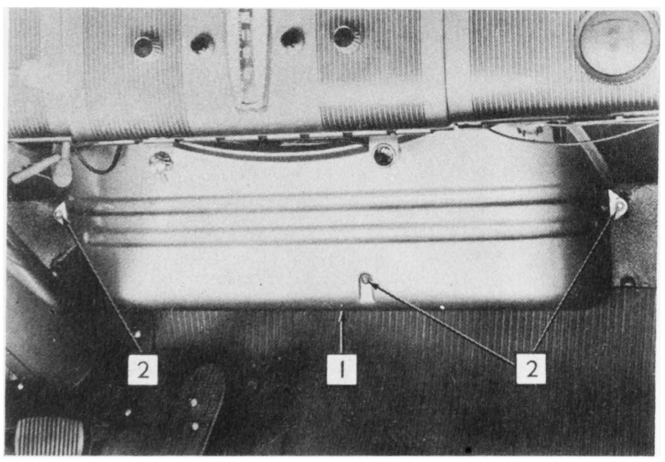


Figure 5—Heater Core Removal and Installation.

Heater Motor and Fan Removal and Installation

Remove the heat deflector (Fig. 6).



1. Air deflector
2. Deflector mounting screws

Figure 6—Air Deflector and Mounting Screws.

Remove the heater motor to bracket studs and lower the motor (Fig. 7).

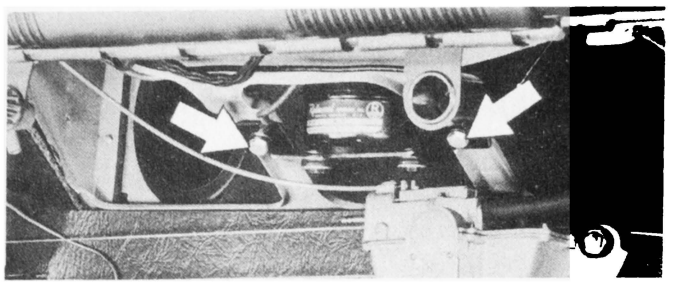


Figure 7—Heater Motor to Bracket Studs.

Remove the heater fan from the shaft. This fan is held in place by a set screw. Then disconnect the wiring and remove the heater motor.

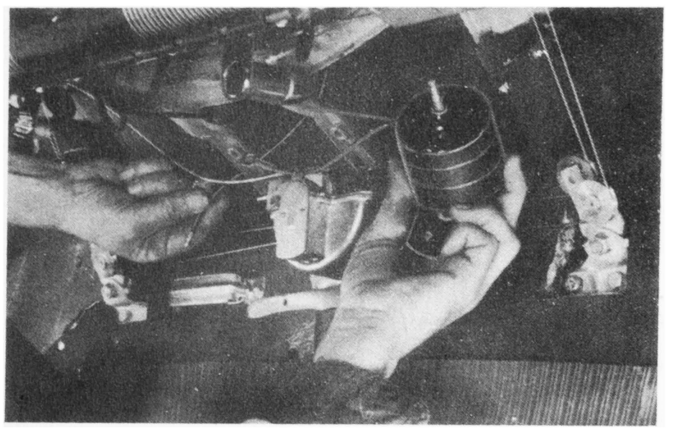


Figure 8—Removing Heater Motor.

To replace the heater motor and fan assembly reverse the removal procedure.

Defroster and Heater Switch Wiring

If the defroster switch has to be replaced or if the connecting wires to this switch are to be discon-

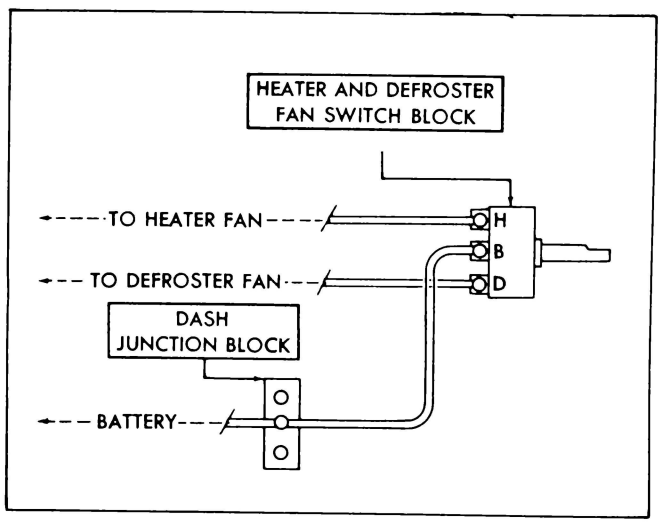


Figure 9—Heater and Defroster Switch Wiring Diagram.

nected for any reason, refer to the wiring diagram shown in Figure 9.

Heater Control and Valve Removal

Correct permanent adjustments have been made at the factory to insure proper operation. It is not necessary, therefore, to make any further adjustments.

If the gas leaks from the bellows or capillary tube, the heater control valve will open to its limit and then can be controlled only by the manual shut-off. Avoid kinking the capillary tube and keep it away from all metal contact.

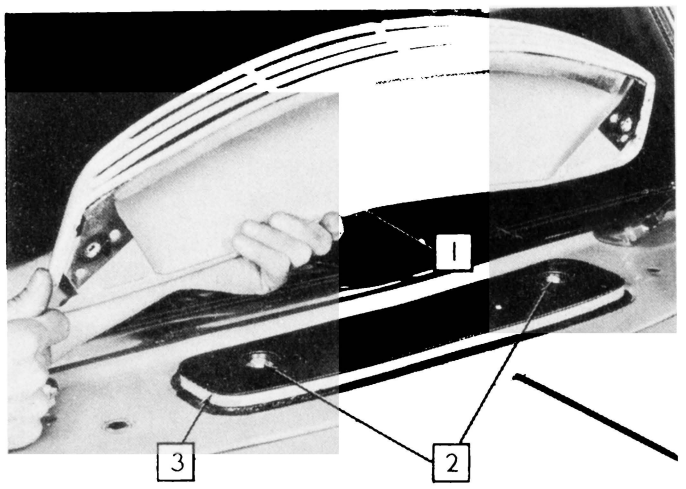
It is held in place by a mounting nut installed over the outlet or upper tube on the valve.

The control knob is connected to the shaft by a set screw and the shaft in turn is connected to the control valve by a rubber coupling.

Loosen the set screw which fastens the heater control knob to the heater control valve shaft; then remove the heater control knob. Using pliers, pull the shaft outward to disconnect the control shaft from the control valve.

Disconnect the heater hoses from the control valve. Plug the heater hoses to prevent draining the radiator.

Remove the two retaining screws that fasten the heater valve insulator retainer to the dash; then remove the plate. This will expose the control valve mounting nut. Removal of this nut from the outlet tube will permit removal of the control valve.



1. Cowl ventilator hood and screen assembly
2. Cowl ventilator cover screws
3. Cowl ventilator cover

Figure 10—Cowl Ventilator Hood Removal.

Cowl Ventilator

The cowl ventilator hood has a combination screen and rain deflector installed in back of the louvers.

This screen assembly is made up of several layers of screen of different gauge mesh which will break up to a mist any water that enters the cowl ventilator.

Moisture entering under the hood, through front, sides, or rear is carried away by a drain trough which is built into the Weather Eye air conditioner box top.

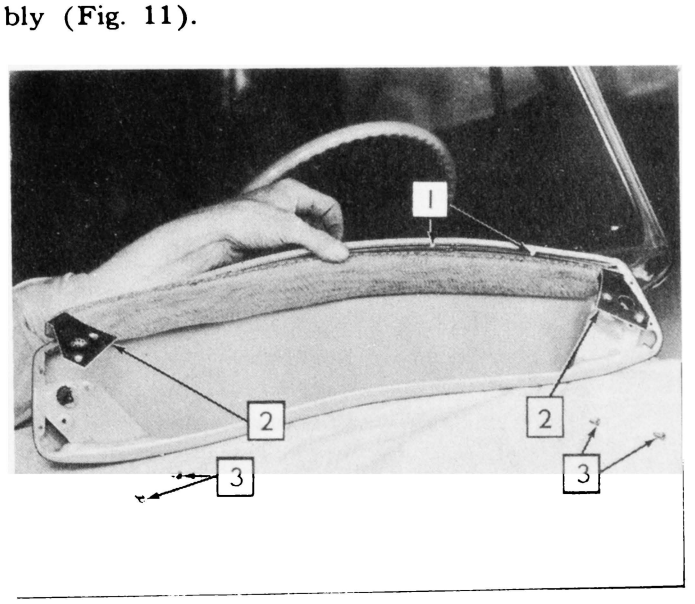
Removing Cowl Ventilator Hood and Screen Assembly

The cowl ventilator hood is attached to the cowl top by one cap screw at each end of the cowl ventilator hood.

They are removed through an opening in the inner dash panel behind the instrument panel (Fig. 10).

Removing Cowl Ventilator Hood Screen Assembly

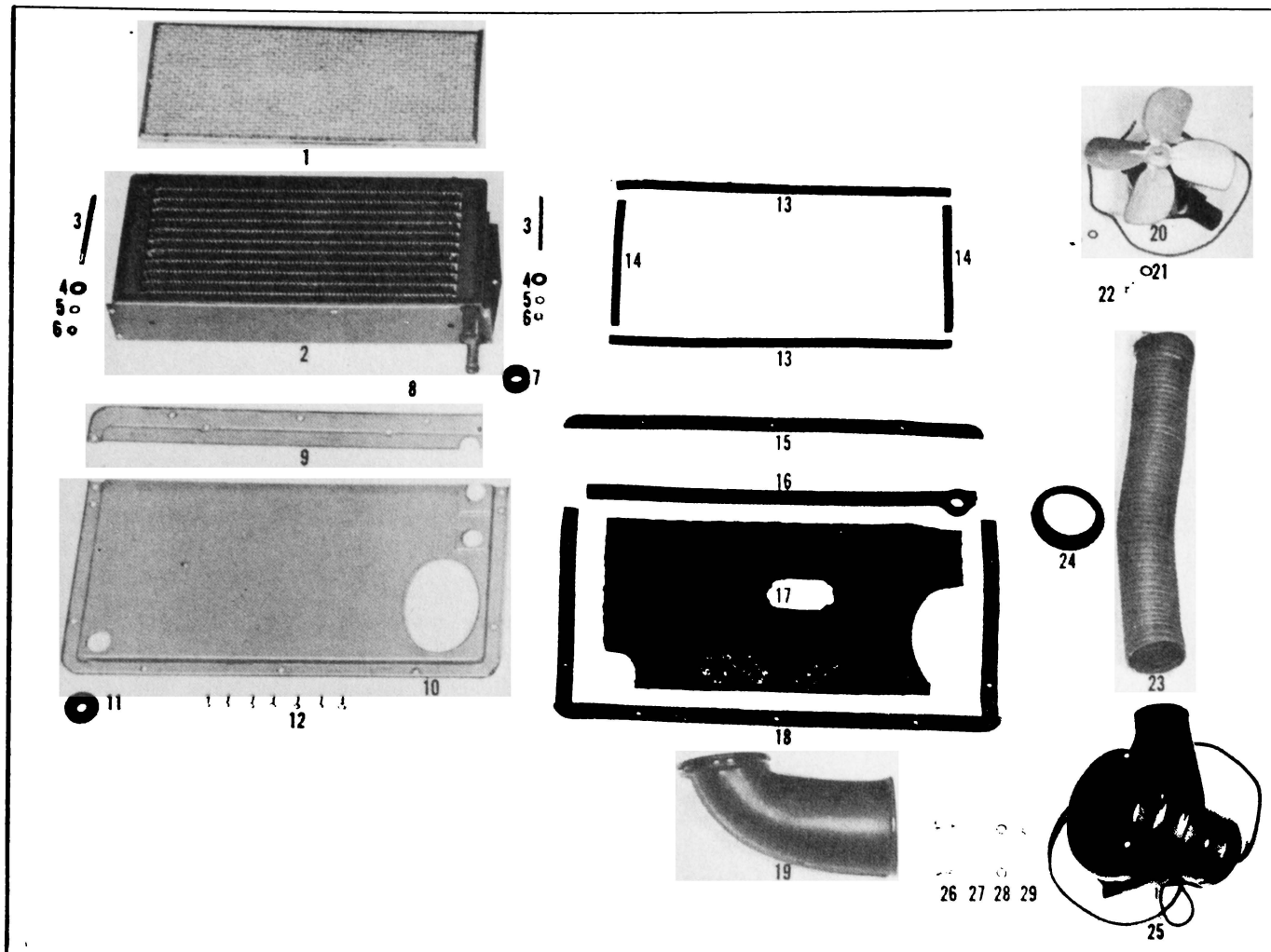
Remove the four screen fastening plate screws; then remove the screen from behind the screen retaining clips and lift out the hood screen assembly (Fig. 11).



1. Screen retaining clips
2. Screen fastening plate
3. Screen fastening plate screws

Figure 11—Cowl Ventilator Hood Screen Assembly Removal.

For identification of Weather Eye parts see Figure 12.



1. Air filter
2. Heater core
3. Heater core support stud
4. Heater core support stud flat washer
5. Heater core support stud lockwasher
6. Heater core support stud nut
7. Heater core inlet and outlet tube seal
8. Heater hopper box cover—upper screws
9. Heater hopper box cover—upper
10. Heater hopper box cover—lower
11. Windshield wiper tube grommet
12. Heater hopper box cover—lower screws
13. Heater core gaskets—long
14. Heater core gaskets—short
15. Heater hopper box cover—upper gasket
16. Heater cover gasket to core
17. Heater hopper box cover—lower insulation
18. Heater hopper box cover—lower gasket
19. Heater to defroster motor boot
20. Heater fan
21. Heater fan to bracket lockwasher
22. Heater fan to bracket screw
23. Defroster hose
24. Defroster hose grommet
25. Defroster fan and motor
26. Defroster motor screw
27. Defroster motor flat washer
28. Defroster motor nut lockwasher
29. Defroster motor nut

Figure 12—Weather Eye (Disassembled View).

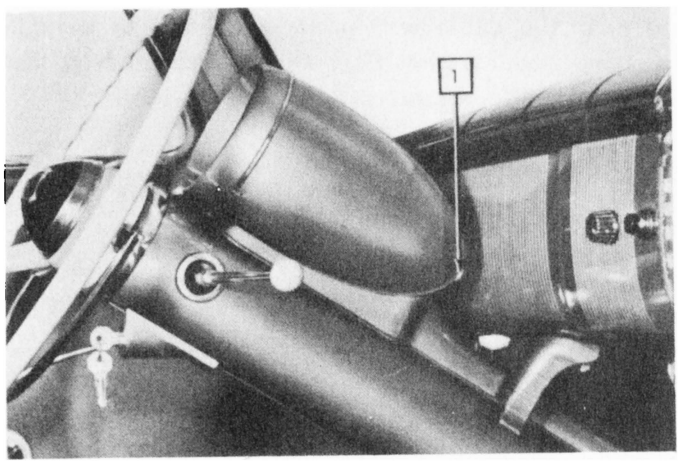
SPEEDOMETER

SPEEDOMETERS

The speedometers used on the 1949 Nash cars are of the magnetic type.

For servicing of the speedometer head within warranty, it is recommended that the head be replaced with a unit from stock. For maintenance service after the warranty period, the head should be removed and taken to an authorized Auto-Lite service station.

Lubrication of the needle shaft bearing is provided by a reservoir and wick located at the rear of the head. Very little lubrication is required at this point.



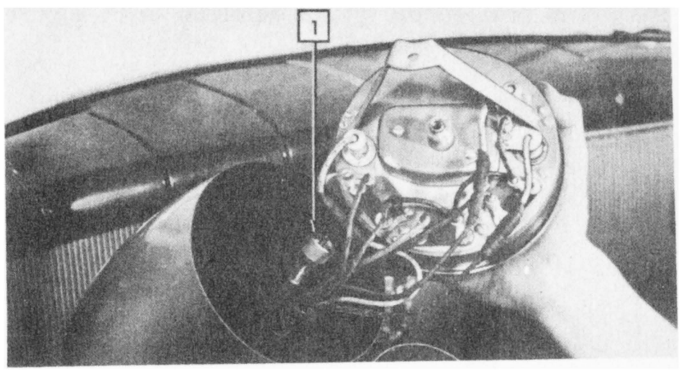
1. Retaining bolt

Figure 13—Remove Instrument Cluster Head Retaining Bolt.

Removing the Speedometer

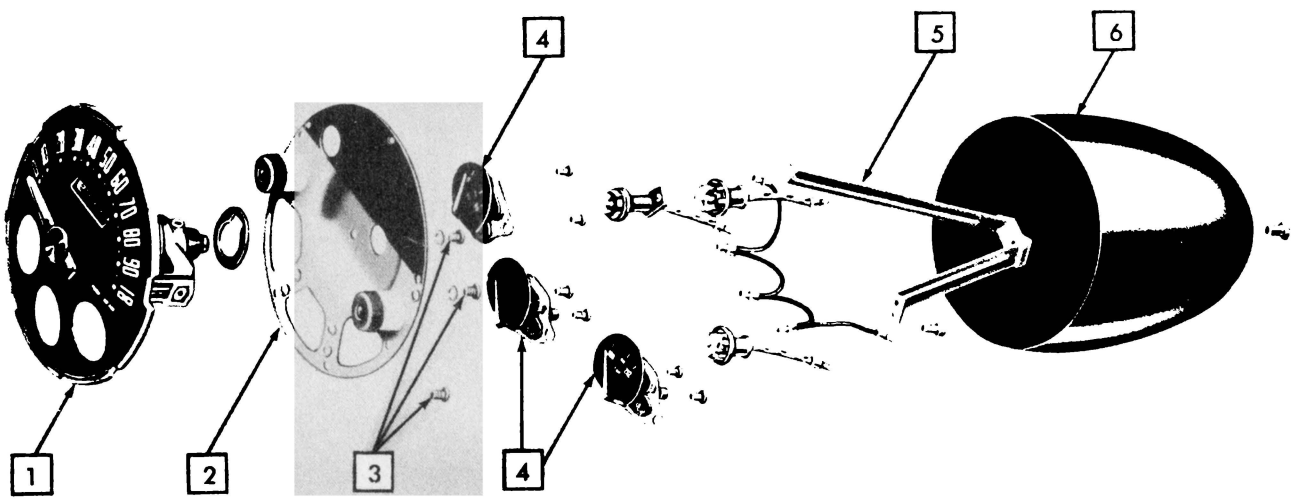
First remove the battery ground strap from the battery. Then remove the instrument cluster retaining bolt from the back of the instrument cluster housing as shown in Figure 13.

Pull the instrument cluster head out and away from the housing and disconnect the speedometer cable from the speedometer, as shown in Figure 14. Remove the wires from each of the instruments and tag them for their correct replacement.



1. Speedometer cable

Figure 14—Disconnect the Speedometer Cable and the Instrument Wires to Remove the Speedometer Head from the Housing.



1. Speedometer head
2. Instrument gauge plate Instrument mounting
3. Plate screws
4. Oil, fuel and temperature gauges
5. Instrument cluster brace
6. Instrument cluster housing

Figure 15—Exploded View of Instrument Cluster Head.

Remove the four screws that fasten the instrument cluster brace to the speedometer head, and the three screws from the instrument mounting plate, referred to in Figure 15.

Remove the two screws that fasten the speedometer head to the instrument mounting plate and separate the speedometer head from the instrument mounting plate.

REMOVING OIL, FUEL AND TEMPERATURE GAUGES

To remove any one or all of the gauges from the instrument mounting plate, remove the two screws that fasten each of the gauges to the mounting plate and remove the gauge, referred to in Figure 15. For testing procedure see Electrical Section covering instrument cluster gauges.

Speedometer Cable Inspection

When working on the speedometer, always inspect the speedometer cable housing for any kinks or sharp bends in the housing. Make sure that the cable is of the correct length for the series car being worked on.

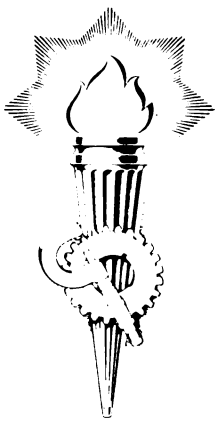
Inspect the end play of the speedometer needle shaft bearing. This should not exceed a maximum of .005".

The speedometer cable requires no lubrication, but as a sound deadener, it is sometimes beneficial to coat the cable with a light coating of a high melting point grease. Grease recommended by the speedometer manufacturer should be used.

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BODY SECTION



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INTRODUCTION

The information and instructions in this section outline detailed procedures in maintenance operations and adjustments of the 1949 "600" Series and the 1949 "Ambassador 6" Series Bodies.

REFERENCE

The part name or assembly involved in any maintenance or adjustment operation is numbered in the Table of Contents and also in the descriptive matter and illustrations throughout the Section.

An alphabetical index is provided at the end of this Section for handy reference, to obtain the subject number assigned.

The servicing of some parts or assemblies may involve several operations which are numbered in the sequence in which they are to be performed.

For example, if you are going to remove a remote control, refer to: Subject No. 20, REMOTE CONTROL — FRONT DOOR.

REMOVAL PROCEDURE

1. Remove finish molding. See subject 14.
2. Remove remote control and window regulator handles. See subject 15.
3. Remove ventilator handle. See subject 16.

Therefore, in performing the operation of removing the Remote Control, if detailed information should be required to remove the finish molding and the handles, reference can be made to the alphabetical index. This index readily locates the procedures of these operations, which are performed in connection with the removal of the remote control, as given in detail under Subjects No. 14 and No. 15 respectively.

BODY SECTION

NASH TECHNICAL SERVICE MANUAL

1. BODY IDENTIFICATION

1949 "600" and "Ambassador 6" Series

Nash bodies of both series are identified by the car serial and body number plates, located on the dash at the right side under the hood. (Figs. 1, 1-A and 1-B.)

As illustrated below, the serial numbers are prefixed with the letters "K" and "R" as identifying symbols for the "600" Series and the "Ambassador 6" Series respectively.

The numbers on these plates must be given when any reference is made to the body, such as in ordering parts or material for the body.

Whenever reference is made to various parts of the body, both the name of the part and its location

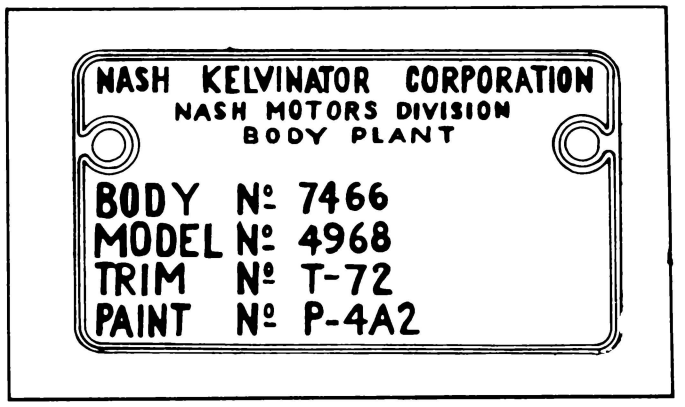
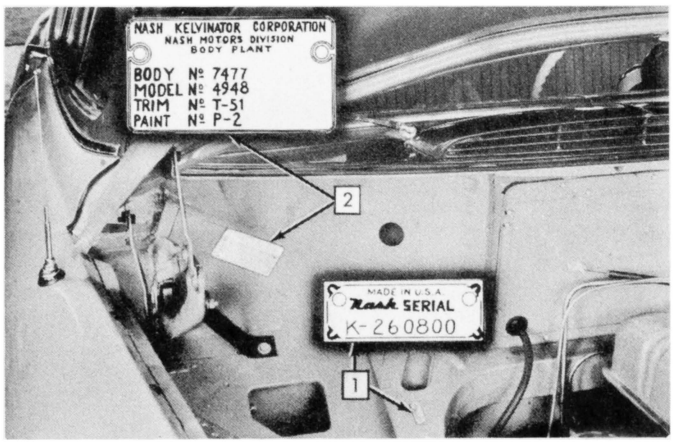


Figure 1-B—Body Number Plate, "Ambassador 6" Series.



1. Serial number plate
2. Body number plate

Figure 1—Car Identification Number Plates.

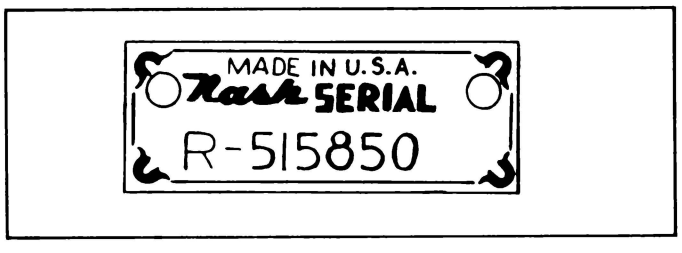


Figure 1-A—Serial Number Plate, "Ambassador 6" Series.

are very essential. For example, a door, seat cushion, seat back or fender should be referred to as right or left, front or rear.

2. ORDERING BODY PARTS

1949 "600" and "Ambassador 6" Series

Parts are ordered by part number. Therefore, with the above information, the parts desired may easily be located in the parts list, and the part number and price obtained.

Where parts are specially ordered for a certain body the serial, model and body numbers must accompany all parts orders.

Ordering Trim Material

When ordering trimmed parts or trim material, the serial, model, body, and trim numbers are required. A sample of the upholstery is helpful in insuring the correct match.

Ordering Paint

When ordering paint from local DuPont or Ditzler paint dealers, furnish them the paint code numbers as shown on the body number plate. It is also important that the name and color of paint required be given. This information is requested due to the

fact that some cars are painted two-tone, and unless the color name is given it would not be known which color is desired.

For example:
Paint No. P-2

This would indicate the complete car was painted in one color.

Paint No. P4A2

This would indicate the lower color was No. 4 and the upper color was No. 2.

3. BODIES—COMPLETE OR SKELETON

1949 "600" and "Ambassador 6" Series

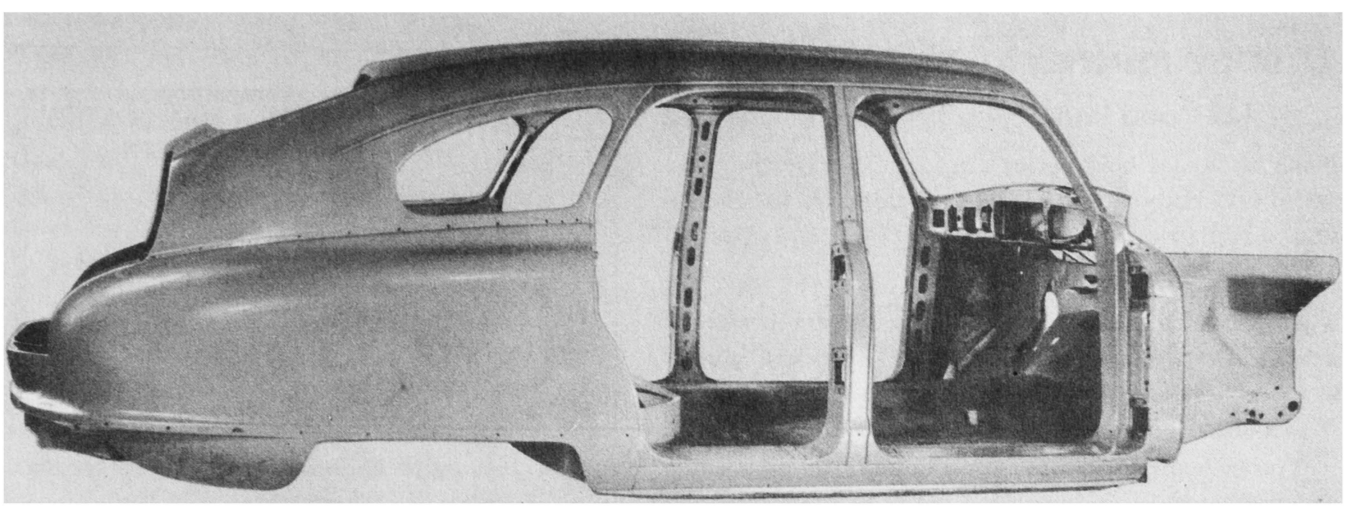
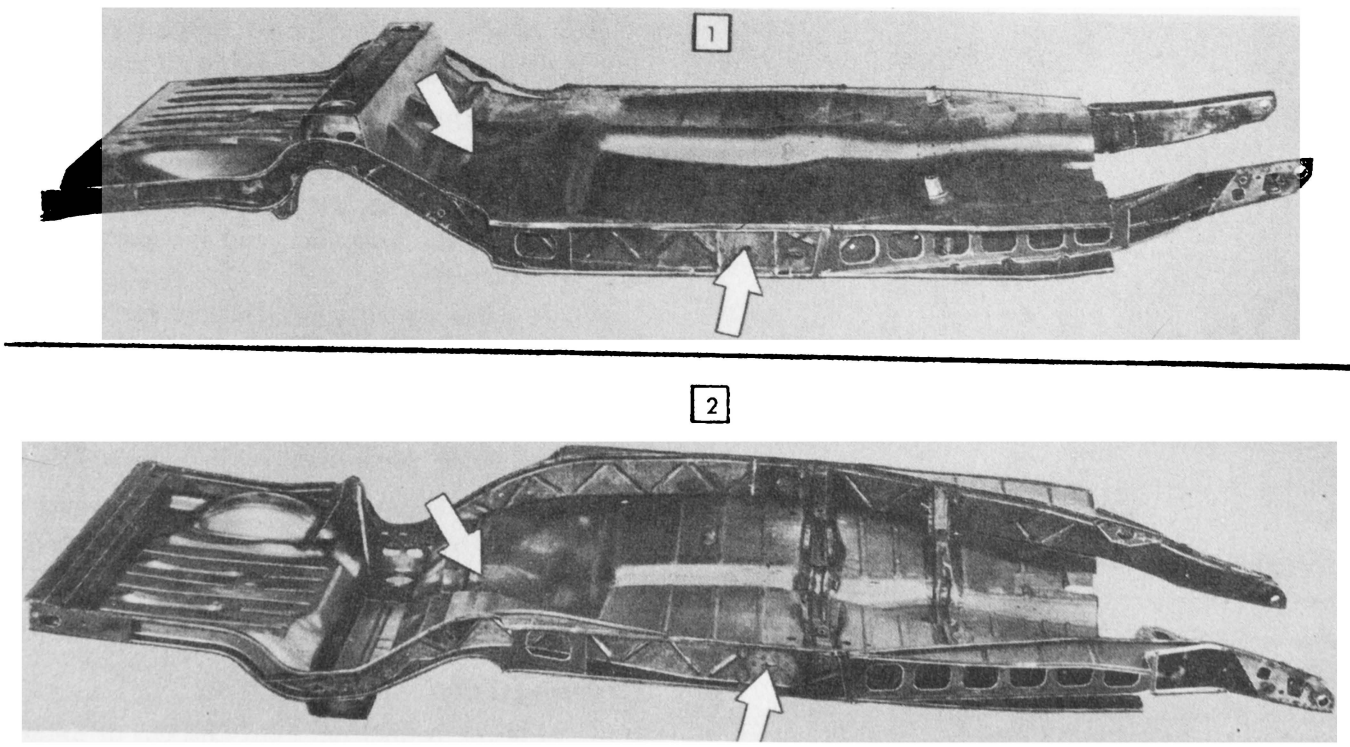


Figure 3—Skeleton Body, "Ambassador 6" Series.



1. Top view
2. Bottom view

Figure 4—Top and Bottom Views of "600" Series Floor and Frame Unit Showing Weld Joints of Individual Assemblies.

Complete Bodies

The Nash 1949 all-steel bodies are available as a complete unit in all models, painted, with upholstery and hardware, without instruments and chassis parts.

Skeleton Bodies

These are also available in all models, as shown in Figure 3, as replacements, when the car body is damaged beyond repair, while the doors, trim material, hardware and other parts may be repaired and reused. When this is the case, it is less expensive to use a "skeleton body" to which the undamaged or repaired parts are transferred.

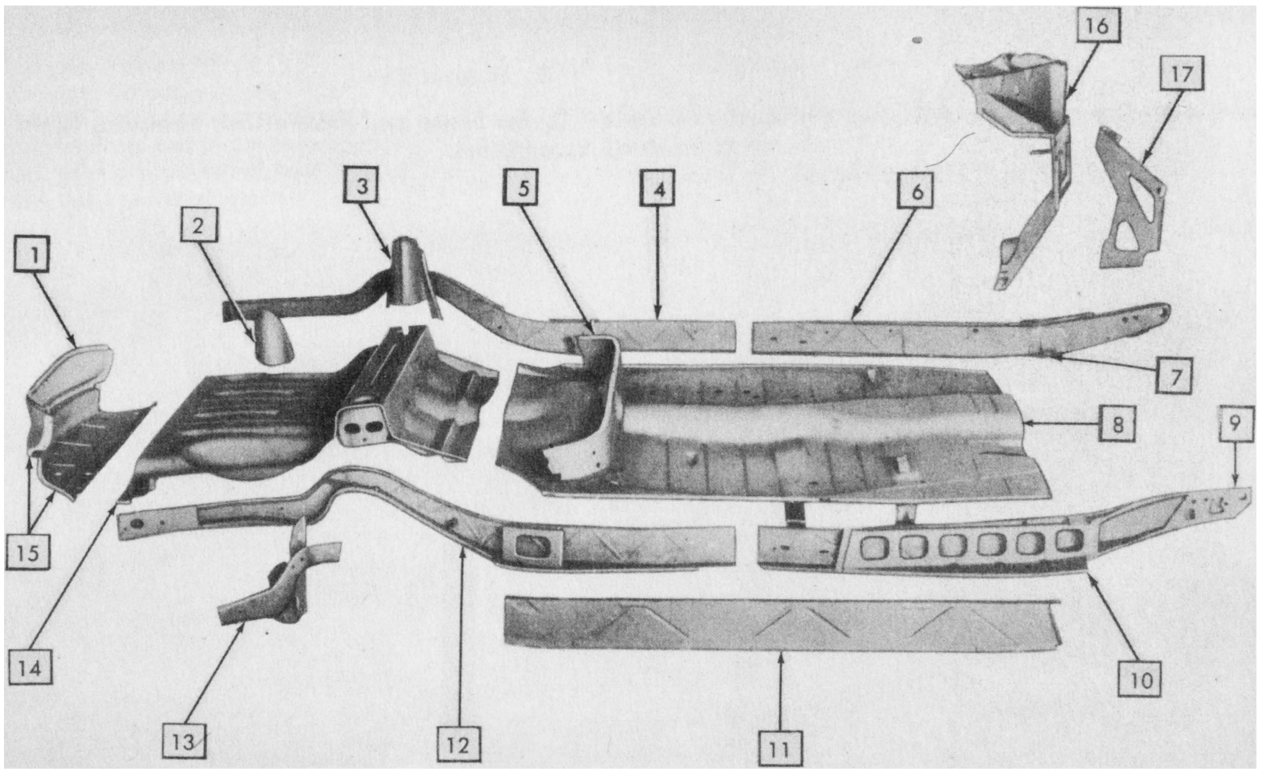
NOTE: *Bodies, complete or skeleton, are normally available only during the production year for the model desired.*

4. COMPLETE ASSEMBLIES, SUB-ASSEMBLIES AND INDIVIDUAL PARTS

1949 "600" and "Ambassador 6" Series

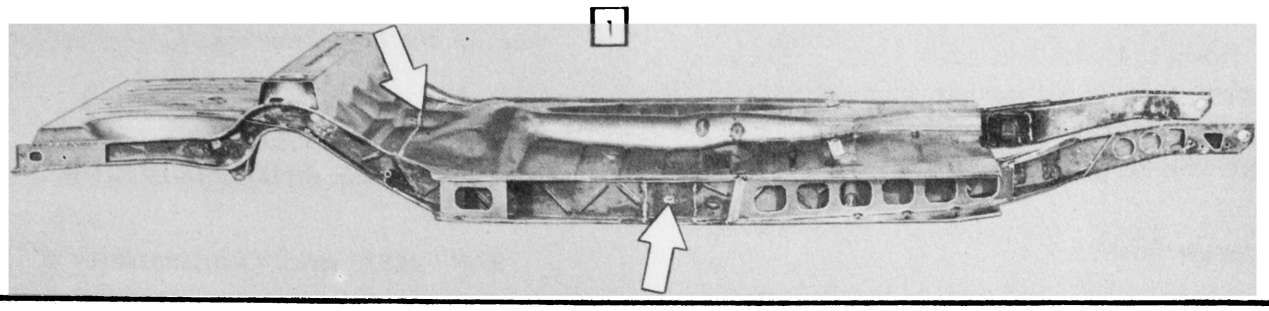
Individual assemblies or the various parts of each assembly may be welded in, as shown in Figures 4, 4-A, 4-B, 4-C, 4-D and 4-E. Many times, replacing damaged panels with new parts is less expensive than repairing the damaged section.

Underbody Floor, Frame Unit Sub-Assemblies and Individual Parts



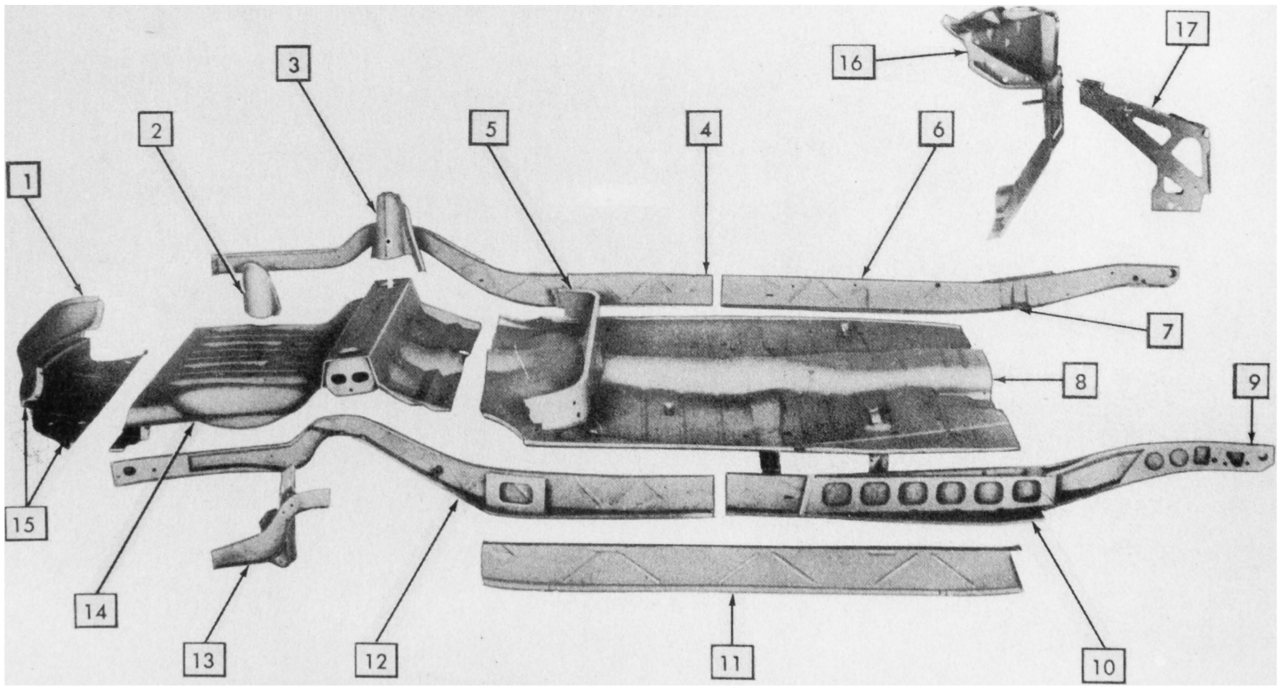
1. Rear deck lower center panel (only)
2. Gas tank filler neck cover
3. Shock absorber housing
4. Floor side sill rear—left
5. Rear seat cushion riser
6. Floor side sill front—left
7. Motor support bracket
8. Front floor pan assembly
9. Side sill reinforcement front—right
10. Floor side sill front—right
11. Body side sill panel—right
12. Floor side sill rear—right
13. Stabilizer bar bracket with sill reinforcement
14. Rear floor pan assembly
15. Rear deck lower center panel and tool pan assembly
16. Dash assembly
17. Dash to sill brace assembly

Figure 4-A—Individual Parts of "600" Series Underbody Floor and Frame Unit.



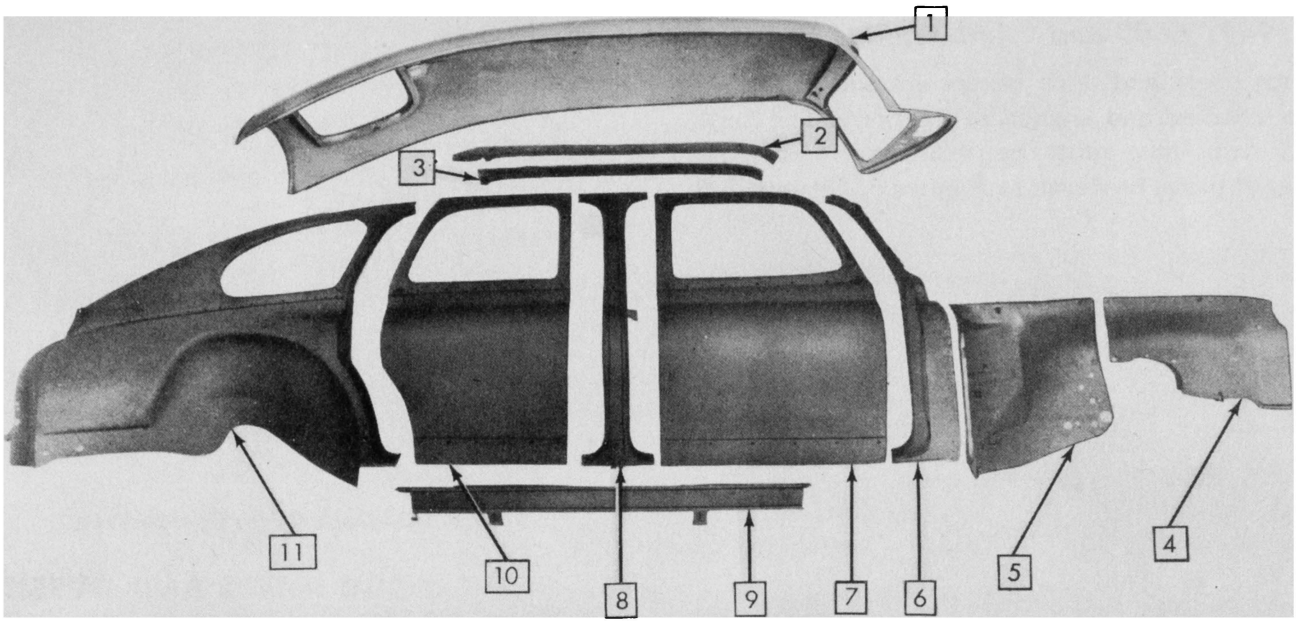
1. Top view
2. Bottom view

Figure 4-B—Top and Bottom Views of "Ambassador 6" Series Floor and Frame Unit Showing Weld Joints of Individual Assemblies.



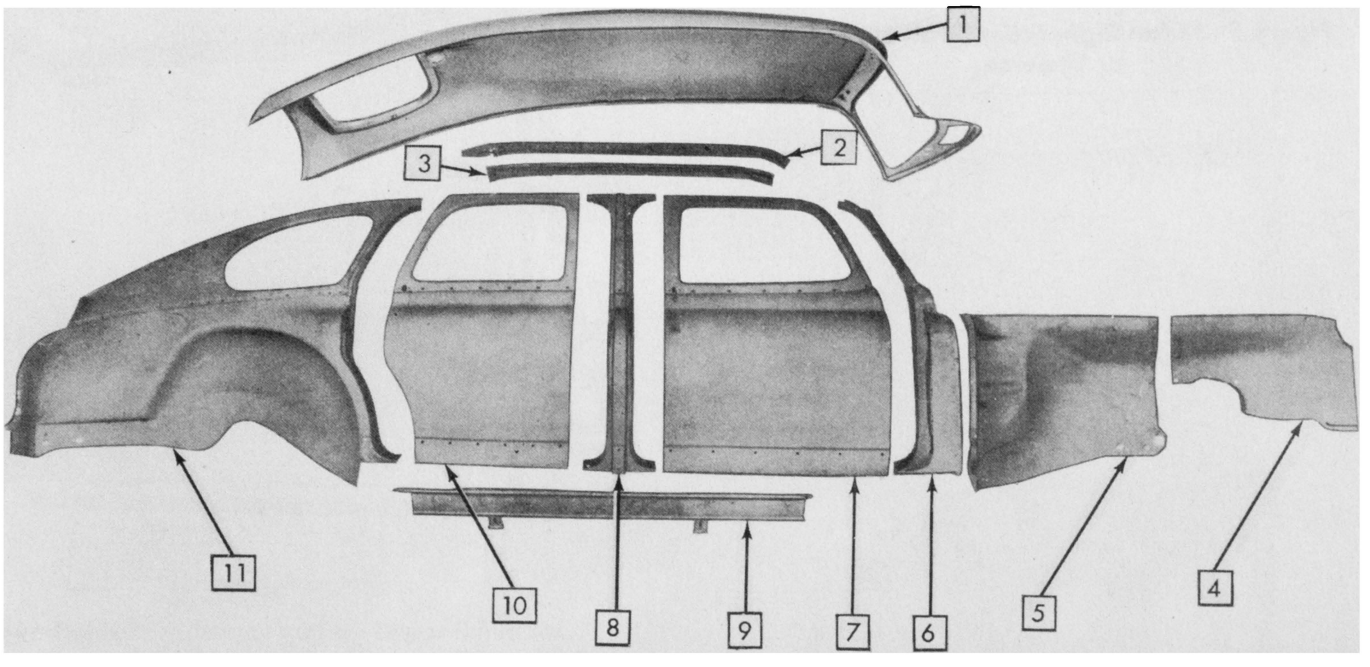
1. Rear deck lower center panel (only)
2. Gas tank filler neck cover
3. Shock absorber housing
4. Floor side sill rear—left
5. Rear seat cushion riser
6. Floor side sill front—left
7. Motor support bracket
8. Front floor pan assembly
9. Side sill reinforcement front—right
10. Floor side sill front—right
11. Body side sill panel—right
12. Floor side sill rear—right
13. Stabilizer bar bracket with sill reinforcement
14. Rear floor pan assembly
15. Rear deck lower center panel and tool pan assembly
16. Dash assembly
17. Dash to sill brace assembly

Figure 4-C—Individual Parts of "Ambassador 6" Series Underbody Floor Frame Unit.



1. Roof panel assembly
2. Side roof rail panel inner—right
3. Side roof rail panel outer—right
4. Front wheelhouse panel front—right
5. Front wheelhouse panel rear—right
6. Front body pillar assembly
7. Front door—right
8. Center body pillar assembly—right
9. Running board apron—right
10. Rear door
11. Rear quarter side panel assembly—right

Figure 4-D—Body Panels Assemblies, "600" Series. Four-Door Models.



1. Roof panel assembly
2. Side roof rail panel inner—right
3. Side roof rail panel outer—right
4. Front wheelhouse panel front—right
5. Front wheelhouse panel rear—right
6. Front body pillar assembly
7. Front door—right
8. Center body pillar assembly—right
9. Running board apron—right
10. Rear door
11. Rear quarter side panel assembly—right

Figure 4-E—Body Panels Assemblies, "Ambassador 6" Series. Four-Door Models.

5. DOORS AND DECK COVERS

1949 "600" and "Ambassador 6" Series

Service doors and deck covers are shipped ready to be installed and aligned to the body. The hardware, trim, etc., must be transferred from the damaged parts, as shown in Figures 5, 5-A and 5-B.

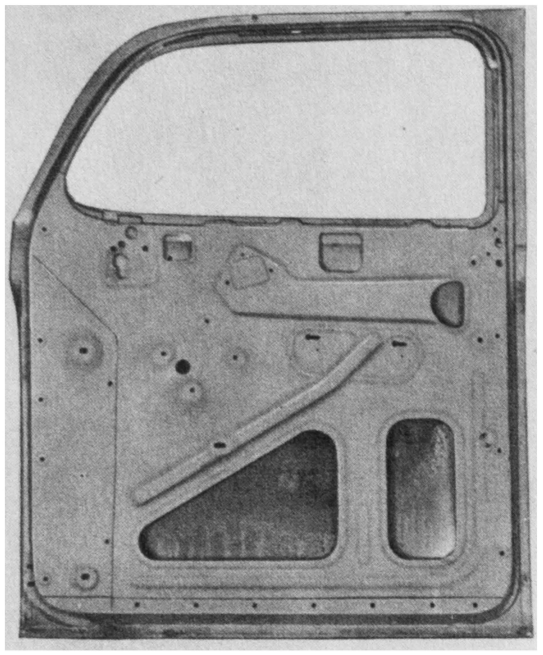


Figure 5—Sedan Right Front Door; Stage "A" or Skeleton.

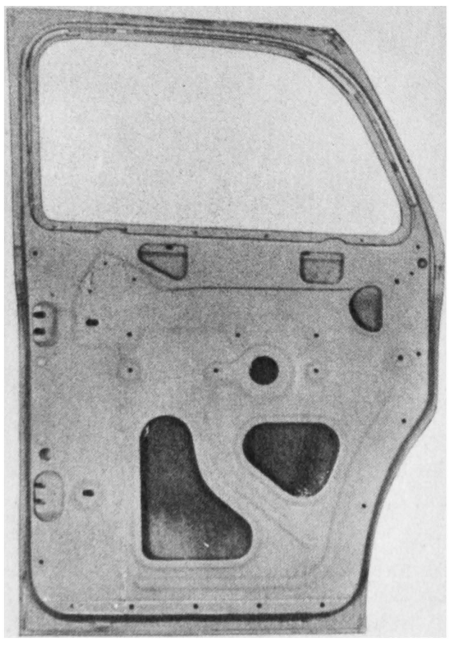


Figure 5-A—Sedan Right Rear Door; Stage "A" or Skeleton.

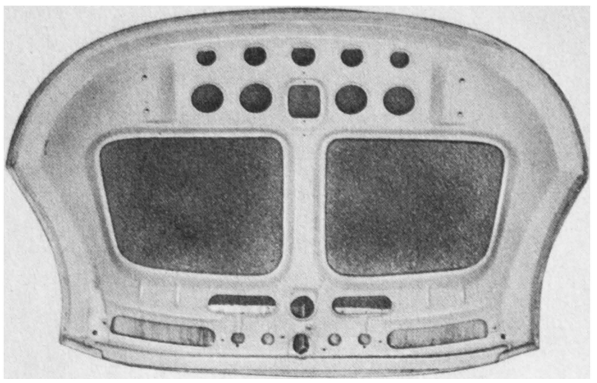
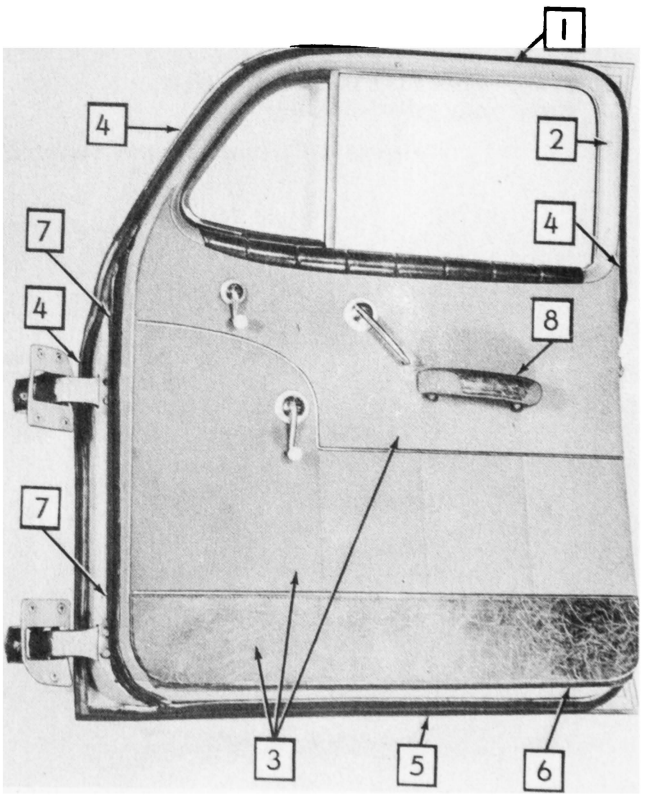


Figure 5-B—Deck Cover (Inside View).

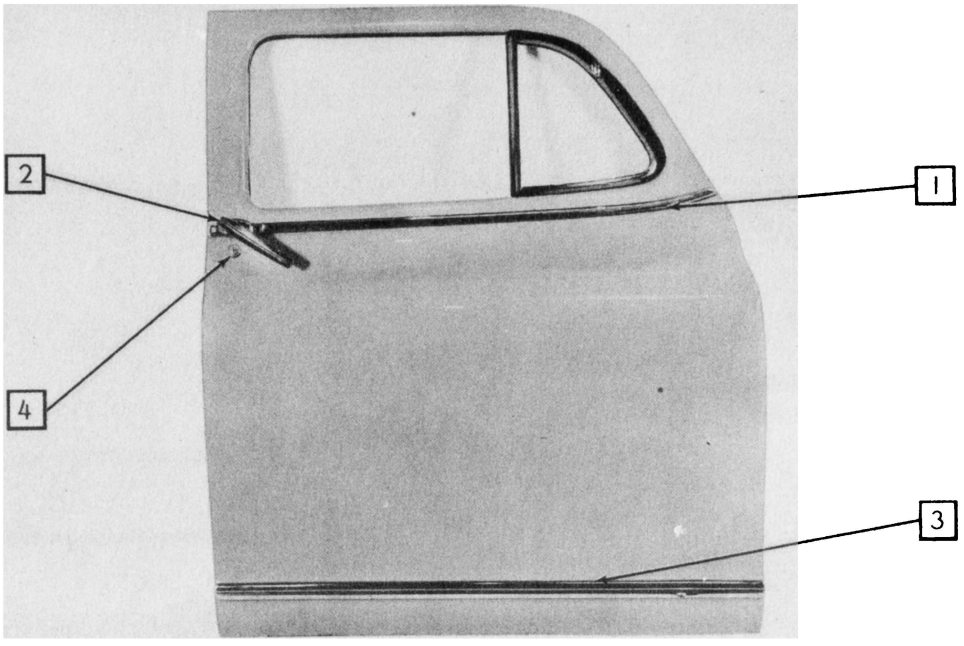
6. FRONT DOOR INSIDE AND OUTSIDE TRIM PARTS

1949 "600" and "Ambassador 6" Series



1. Finish molding and overlay assembly (Subject 14)
2. Finish molding screws (Subject 14)
3. Trim panel assembly (Subject 18)
4. Sealer rubber top and sides (Subject 42)
5. Sealer rubber bottom outer (on door) (Subject 42)
6. Sealer rubber bottom inner (on trim panel) (Subject 42)
7. Sealer rubber hinge side inner (Subject 42)
8. Arm rest (Subject 17)

Figure 6—Right Front Door (Inside).



1. Belt molding (Subject 44)
2. Handle (Subject 12)
3. Lower molding (Subject 44)
4. Key lock (Subjects 13-19)

Figure 6-A—Right Front Door (Outside).

7. PARTS ASSEMBLED—RIGHT FRONT DOOR

1949 "600" and "Ambassador 6" Series

Listed below for convenience and reference, are the names of the various parts used in the door, see Figure 7.

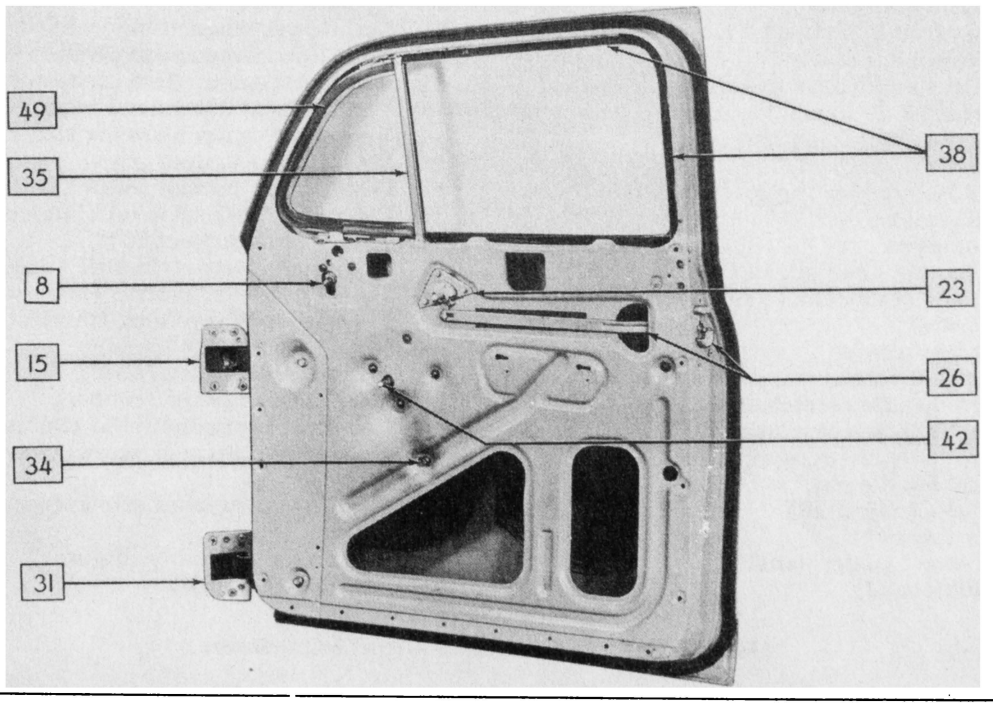
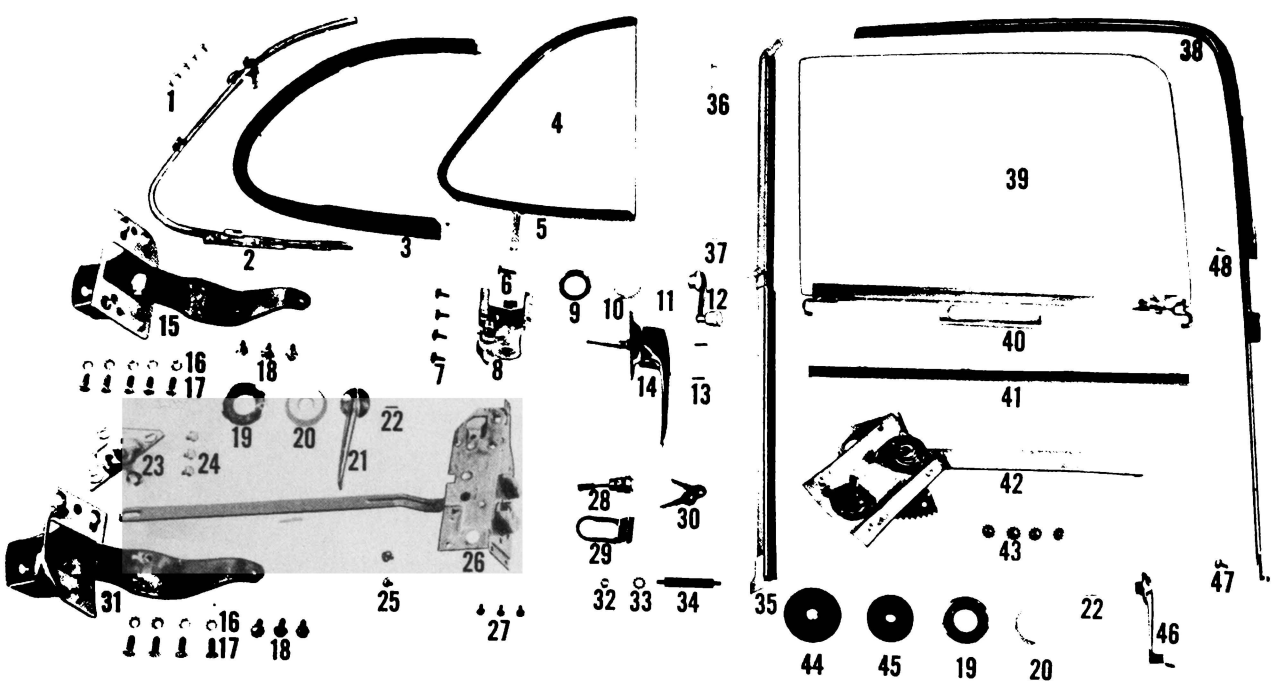


Figure 7—Parts Assembled—Right Front Door.
(See Figure 8 for Identification of Parts.)

8. PARTS REMOVED—RIGHT FRONT DOOR



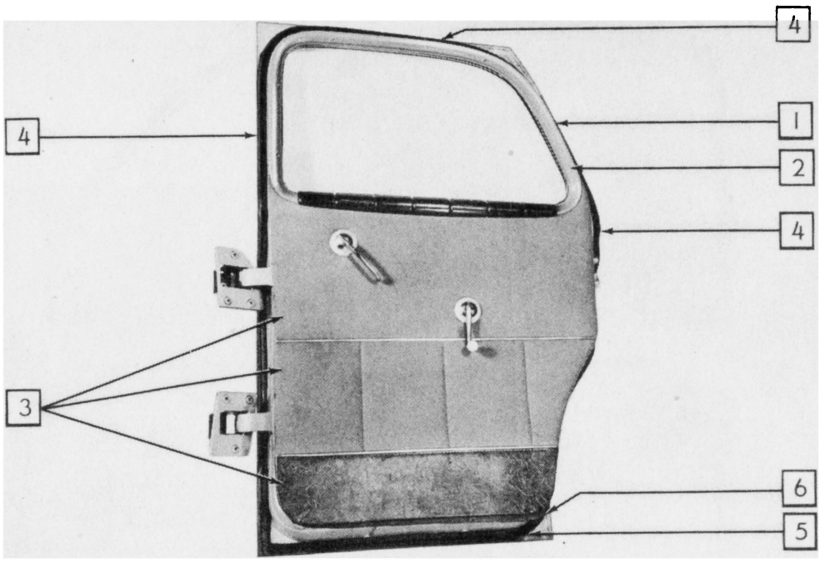
1. Ventilation channel screws
2. Ventilation channel (Subject 24)
3. Ventilator rubber weatherstrip (Subject 24)
4. Ventilator glass (Subject 24)
5. Ventilator glass frame (Subject 24)
6. Regulator to ventilator screw
7. Regulator to door and frame screw
8. Ventilator regulator (Subject 24)
9. Ventilator handle escutcheon base
10. Ventilator handle escutcheon
11. Ventilator handle retainer spring (Subject 16)
12. Ventilator handle (Subject 16)
13. Handle to door screw
14. Outside door handle (Subject 12)
15. Door upper hinge (Subjects 34-39)
16. Door hinge washer
17. Door hinge to post screw
18. Door hinge to door screw
19. Remote control handle escutcheon base
20. Remote control handle escutcheon
21. Remote control handle (Subject 15)
22. Remote control handle pin
23. Remote control (Subject 20)
24. Control to door screw
25. Lock to door screw (inner panel)
26. Door lock (Subject 22)
27. Lock to door screw (door pillar)
28. Cylinder lock (Subjects 13-19)
29. Cylinder lock retainer spring (Subject 13)
30. Cylinder lock keys
31. Door lower hinge (Subject 39)
32. Ventilator center glass division bar nut
33. Ventilator center glass division bar lock washer
34. Ventilator center glass division bar stud
35. Ventilator center glass division bar (Subject 25)
36. Division bar to door screw
37. Division bar to door screw
38. Door glass slide channel (Subject 29)
39. Door glass (Subject 31)
40. Door glass bottom channel (Subject 31)
41. Door glass weatherstrip (body side)
42. Door window regulator (Subject 26)
43. Regulator to door screw
44. Escutcheon washer (fiber)
45. Escutcheon washer (rubber)
46. Window regulator handle (Subject 15)
47. Glass slide channel screw (lower ends) (Subject 29)
48. Glass slide channel screw (upper sides) (Subject 29)
49. Ventilator assembly, Figure 7, includes items 2-3-4-5 (Subject 24)

Figure 8—Parts Removed—Right Front Door.

NOTE: The above numbers apply also to Figure 7.

9. REAR DOOR INSIDE AND OUTSIDE TRIM PARTS

1949 "600" and "Ambassador 6" Series



1. Finish molding and overlay assembly (Subjects 14-55)
2. Finish molding screws
3. Trim panel assembly (Subject 18)
4. Sealer rubber top and sides (Subject 42)
5. Sealer rubber bottom outer (on door) (Subject 42)
6. Sealer rubber bottom inner (on trim panel) (Subject 42)

Figure 9—Right Rear Door (Inside).

10. PARTS ASSEMBLED—RIGHT REAR DOOR

1949 "600" and "Ambassador 6" Series

Each part is numbered to conform with the part removed from the door, as shown in Figure 11.

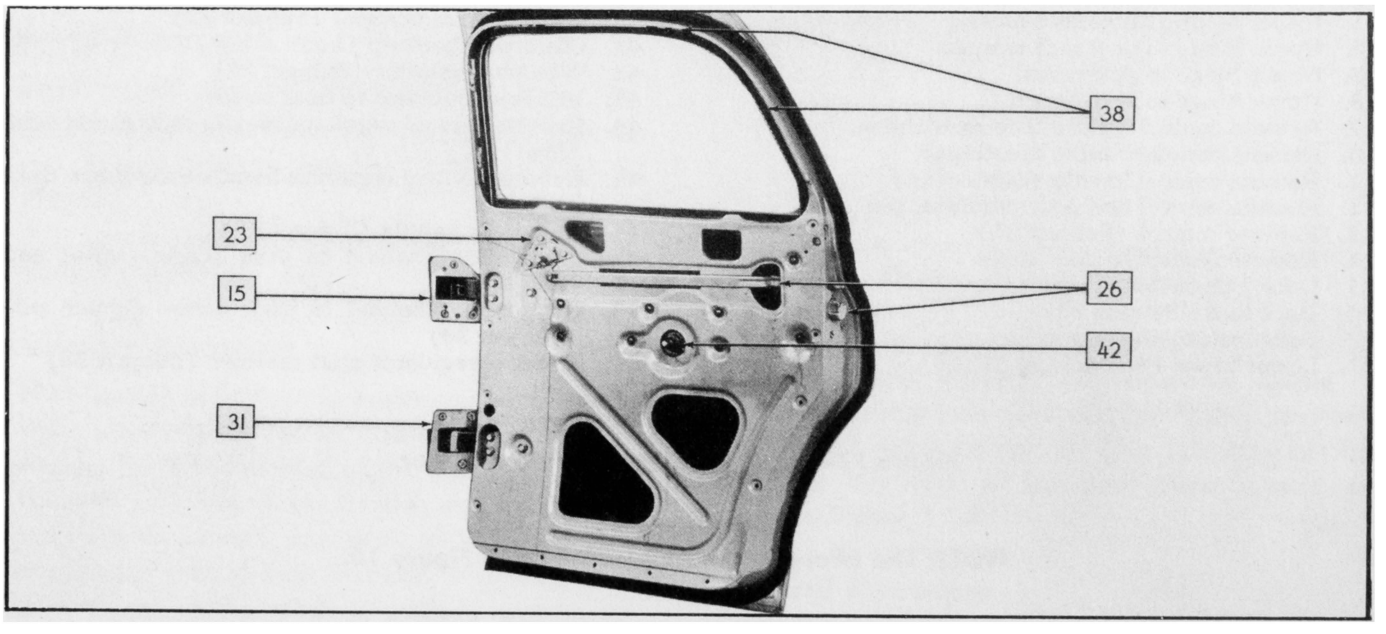
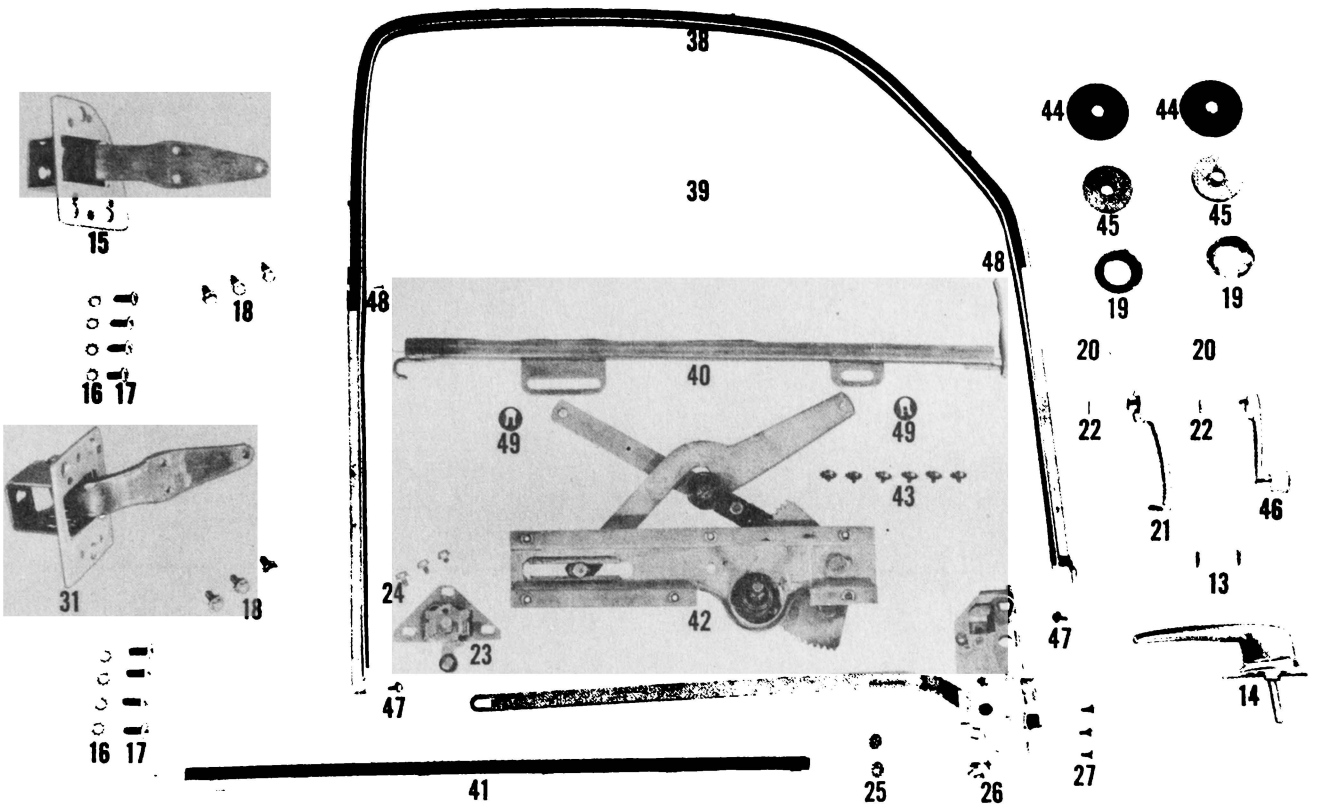


Figure 10—Parts Assembled—Right Rear Door. (See Figure 11 for Identification of Parts.)

11. PARTS REMOVED—RIGHT REAR DOOR

1949 "600" and "Ambassador 6" Series



13. Handle to door screw
14. Outside door handle (Subject 12)
15. Upper hinge (Subjects 34-39)
16. Upper hinge to post lock washer
17. Upper hinge to post screw
18. Upper hinge to door screw
19. Remote control handle base escutcheon
20. Remote control handle escutcheon
21. Remote control handle (Subject 15)
22. Remote control and door regulator pin
23. Remote control (Subject 21)
24. Remote control to door screw
25. Door lock to door screw
26. Door lock (Subject 23)
27. Door lock to door screw
31. Lower hinge (Subjects 34-39)
38. Glass slide channel (Subject 30)
39. Glass (Subject 32)
40. Glass bottom channel (Subject 32)
41. Glass weatherstrip (body side)
42. Window regulator (Subject 28)
43. Window regulator to door screw
44. Remote control regulator handle escutcheon washer (fiber)
45. Remote control regulator handle escutcheon washer (rubber)
46. Regulator handle (Subject 15)
47. Glass slide channel to door screw (lower ends) (Subject 30)
48. Glass slide channel to door screw (upper sides) (Subject 30)
49. Window regulator stud retainer (Subject 28)

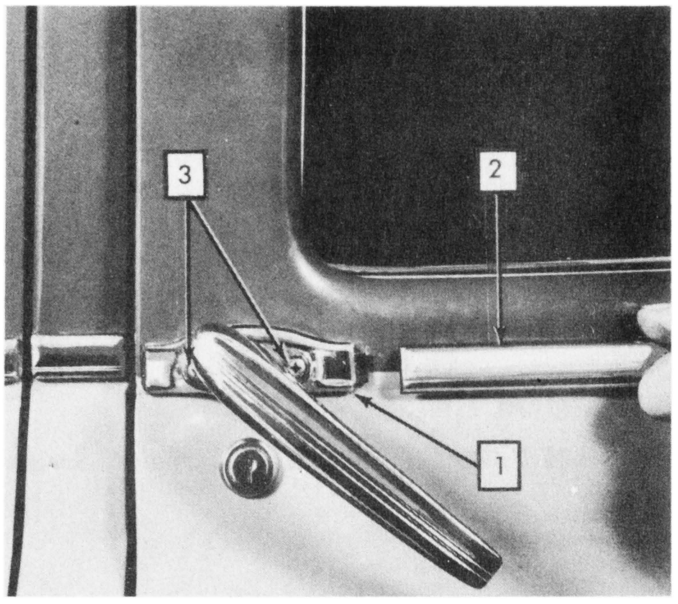
Figure 11—Parts Removed—Right Rear Door.

NOTE: The above numbers also apply to Figure 10.

12. OUTSIDE DOOR HANDLE

1949 "600" and "Ambassador 6" Series

The door handle escutcheon is in line with the belt molding which covers the end of the escutcheon. (Fig. 12.) Therefore, the belt molding must first be removed before the handle escutcheon can be removed. See BELT MOLDING REMOVAL, Subject No. 44.



1. Handle escutcheon
2. Belt molding
3. Handle screws

Figure 12—Releasing Handle Escutcheon by Removing Belt Molding.

Removal Procedure

1. Remove belt molding (Subject 44).
2. Turn handle down as far as possible and remove two screws holding handle to door (item 3, Fig. 12).
3. Pull lightly on door handle to disengage handle shaft from lock and door.

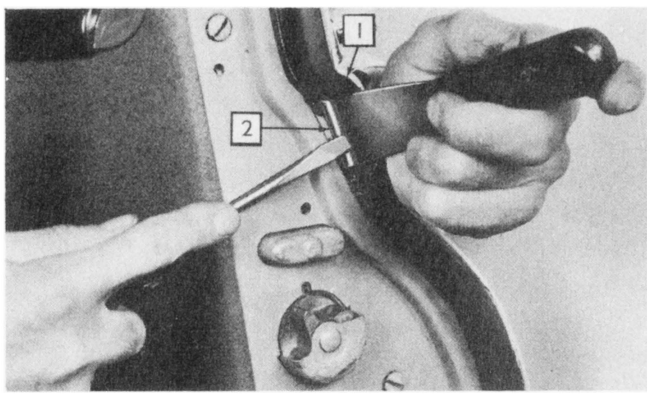
Installation Procedure

4. With handle in horizontal position, insert handle shaft into lock as far as possible. This should engage the first tumbler of the door lock. With constant pressure on the handle, and by turning it slowly downward, the shaft will line up and engage the second lock tumbler.
5. Turn handle down as far as possible, and install screws holding handle to door.
6. Install belt molding (Subject 44).

13. KEY LOCK—FRONT DOORS

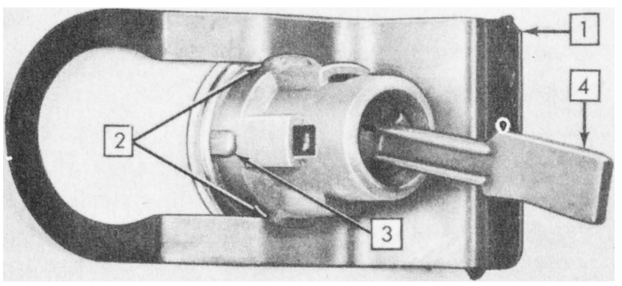
1949 "600" and "Ambassador 6" Series

An opening is provided in the door lock pillar through which the cylinder lock retaining spring is operated. This opening is partially concealed by the door sealer rubber (Fig. 13).



1. Door sealer rubber
2. Retaining spring

Figure 13—Removing Key Lock Retaining Spring. (For Key Lock Removal—Front Doors.)



1. Retainer spring
2. Groove in cylinder lock
3. Holding boss
4. Lock shaft

Figure 13-A—Door Key Lock Retaining Spring in Groove of Cylinder Lock.

The key lock cylinder is provided with a groove on the top and bottom. The retaining spring is inserted in this groove after the key lock is inserted through the retaining spring. This retaining spring holds the key lock to the door outer panels, as shown in Figure 13-A.

Removal Procedure

1. With key in lock and door open, carefully insert putty knife between door sealer rubber and exposed end of retaining spring (Fig. 13).

2. With screw driver, press retaining spring in against putty knife and pry out about one inch. This will slide the retaining spring from the grooves in the lock to the round opening, releasing the lock for removal through the round opening in the retaining spring and from the door, as shown in Figure 13-A.

Installation Procedure

3. Put inner locking device in UNLOCKED POSITION. Insert screw driver from outside of door into locking device through hole in door used for cylinder lock. Now turn it to right as far as possible in right door (and to the left as far as possible in left door).
4. Put key in cylinder lock. Turn it to right as far as possible. Note holding boss on lock housing casting, (item 3, Fig. 13-A). Line this boss up with edge of hole in door outer panel. This will position lock housing for installation in door.

   Now with lock housing in proper position for installation, turn key to left, or vertical position. This will turn the lock shaft to proper position for entrance into the locking device of the door lock (item 4, Fig. 13-A).
5. Align round hole in retaining spring with hole in outer door panel.
6. Insert cylinder lock through door panel and retaining spring and into door lock. Hold cylinder lock firm against door outer panel. Push in retaining spring flush against door lock pillar. Then use screw driver to set retaining spring in its locked position in door pillar under edge of sealer rubber.

NOTE: *In dusty territories, exposed locks should be thoroughly cleansed with a solvent to carry off any foreign matter or gummy substance. Gasoline (one that does not contain lead) may be used, or the lock may be removed and cleaned with alcohol or benzol. Blow out with air hose, and lubricate.*

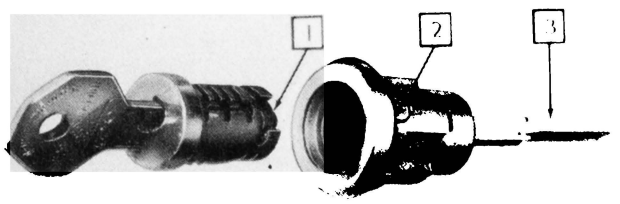
Lubrication

7. Finely powdered graphite is recommended for lubrication.

Removing Key Cylinder from Housing

8. To remove key lock cylinder from housing, first remove the key lock cylinder housing from the door, then insert the keys in lock and turn to left as far as possible. In this position, pull key cylinder from housing (Fig. 13-B). While tumblers are exposed they should be thoroughly cleaned and lubricated.

Install lock cylinders by reversing removal procedure.



1. Slot in key cylinder
2. Boss on housing
3. Handle shaft (flat edge)

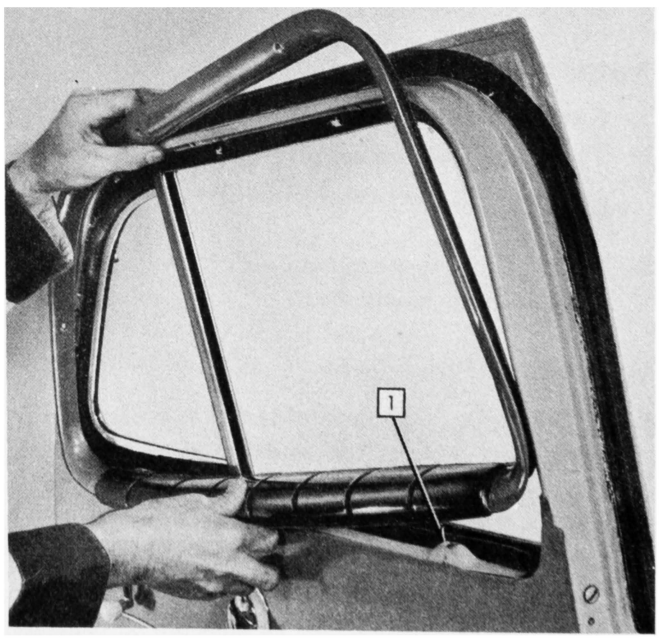
Figure 13-B—Removing Key Lock Cylinder from Housing.

14. DOOR FINISH MOLDINGS

1949 "600" and "Ambassador 6" Series

Removal Procedure

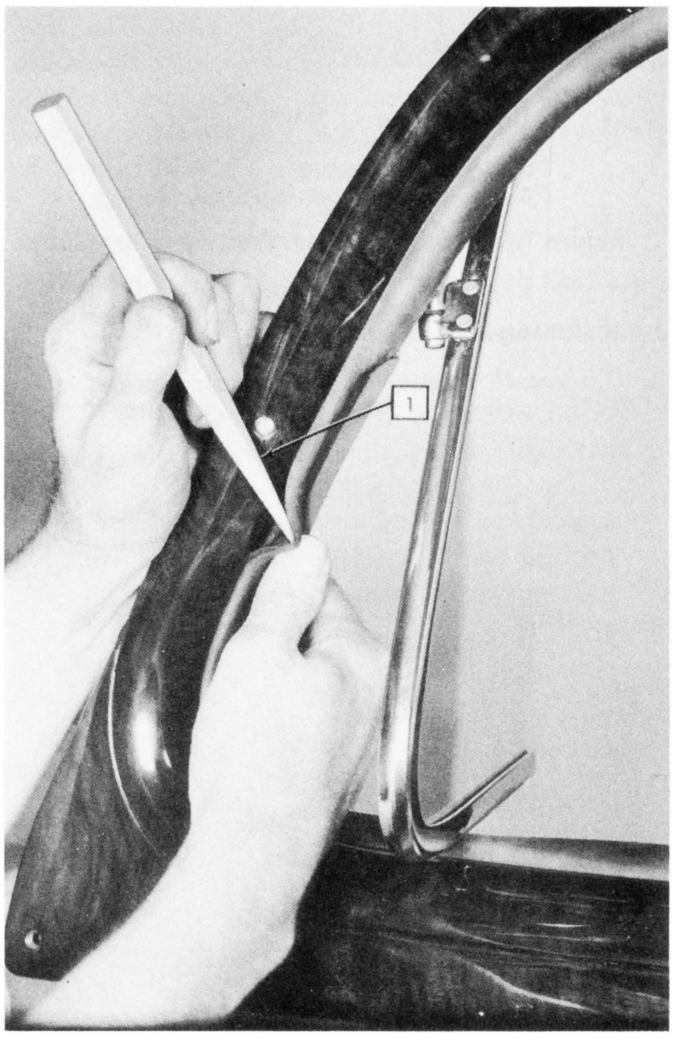
1. Lower window glass.
2. Remove all visible screws which hold molding to door.
3. Pull molding away from door at top, lifting up to unhook it from door inner panel (Fig. 14).



1. Lift up to unhook from door inner panel

Figure 14—Removing Door Finish Molding.

4. When installing finish molding on front doors, before tightening screws, lift lip of ventilator rubber weatherstrip over top of finish molding. Use pointed wood wedge as shown in Figure 14-A. Screw driver or any metal may damage finish on molding.



1. Wooden wedge

Figure 14-A—Lifting Lip of Ventilator Rubber over Finish Molding.

5. Open and close ventilator to check clearance between ventilator glass frame and rubber, adjusting finish molding as necessary to provide free operation and tight closure.
6. Should the upholstery wrinkle slightly on top of door trim panel when finish molding is installed, it can be straightened under molding by using a putty knife (Fig. 14-B). If upholstery is loose from top of trim panel, re-cement it to trim panel rag board, using trim rubber cement, or staple top edge of upholstery to rag board, using paper stapler.

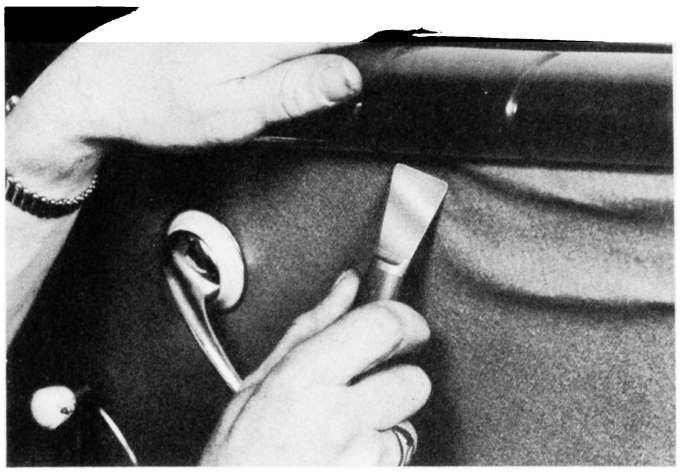


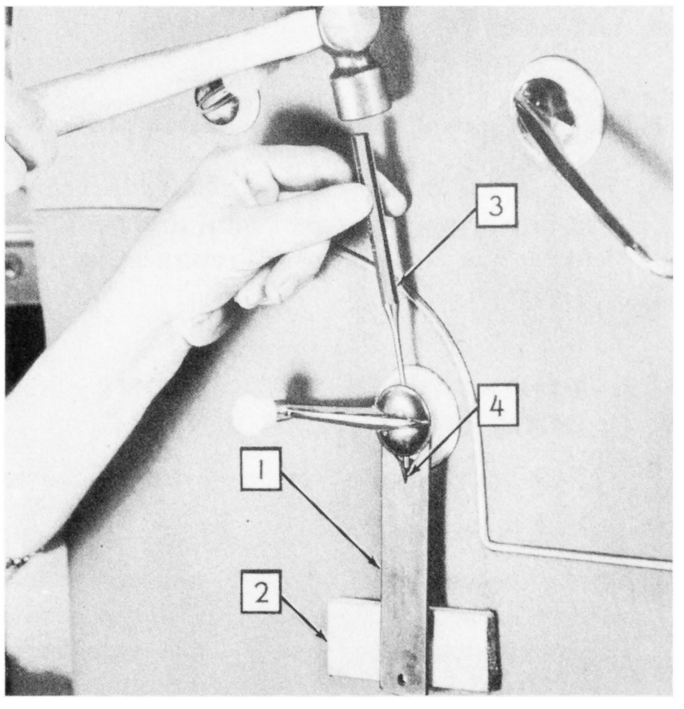
Figure 14-B—Straightening Upholstery under Finish Molding with Dull Putty Knife.

15. REMOTE CONTROL AND WINDOW REGULATOR HANDLES

1949 "600" and "Ambassador 6" Series

Removal Procedure

Insert depressor tool (J-2987) between handle and escutcheon. This will expose the handle pin, which may be driven out with a thin pointed punch, as shown in Figure 15.

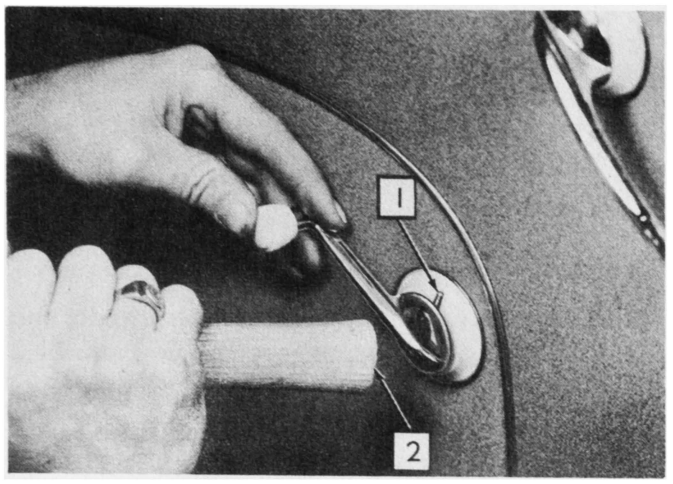


1. Depressor (J-2987)
2. Wood block to hold tension on depressor
3. Drift
4. Handle pin

Figure 15—Removing Window Regulator Handle.

Installation Procedure

1. Set remote control handles at uniform angles on all doors.
2. Set window regulator handles pointing down when windows are in a closed position.
3. Install escutcheon and chrome base on shaft.
4. Install handle in proper position with pin inserted in top half of handle hole.
5. Hold end of handle, pressing in against escutcheon. Use end of hammer handle to drive handle on shaft to proper position so the pin may be tapped lightly to engage hole in shaft, as shown in Figure 15-A.



1. Pin
2. End of hammer handle

Figure 15-A—Installing Window Regulator Handle.

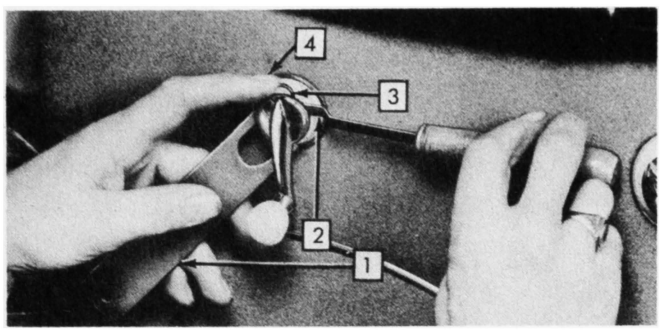
6. Place screw driver or thin pointed punch on end of pin, tapping lightly until it is flush with handle. The escutcheon will return to its place over the pin.

16. VENTILATOR HANDLE—FRONT DOOR

1949 "600" and "Ambassador 6" Series

Removal Procedure

1. Insert depressor tool (J-2987) between handle and escutcheon, prying out until slot in handle under escutcheon is exposed. Hold your finger over top of handle to prevent retaining spring from flying out when released, as shown in Figure 16.
2. With spring removal tool inserted in slot of handle, lift up retaining spring, releasing handle from shaft so it may be removed from door.

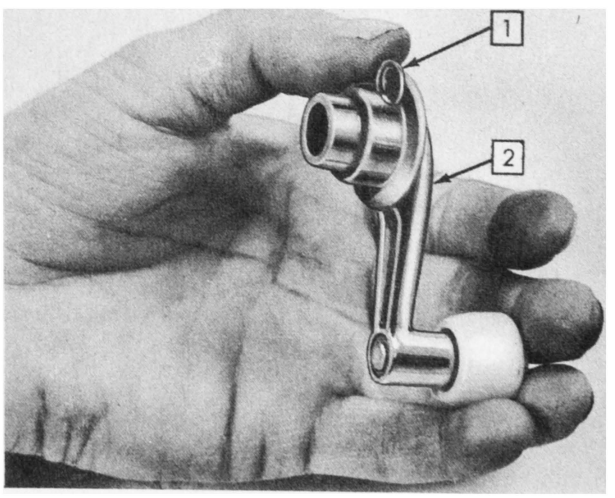


1. Depressor (J-2987)
2. Spring removing tool
3. Retaining spring
4. Hold finger over top of handle

Figure 16—Removing Door Ventilator Handle.

Installation Procedure

3. To install ventilator handle, set retaining spring in slot of handle as shown in Figure 16-A. Then, with thumb or screw driver, press spring into handle until top of spring is flush with top of slot. Insert small screw driver or drift into opening and adjust ends of retainer spring so they are spaced equally in the opening.



1. Retaining spring
2. Ventilator handle

Figure 16-A—Installing Retainer Spring in Door Ventilator Handle.

4. With ventilator closed, install escutcheon chrome base, then escutcheon and handle on shaft. With the knob pointing down, push in handle until retaining spring engages slot in shaft. This may also be tapped on with hammer handle as shown in Figure 15-A.

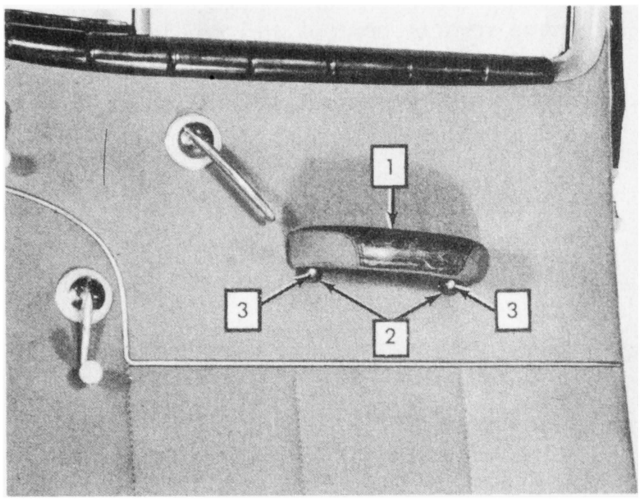
17. FRONT DOOR ARM REST

1949 "600" and "Ambassador 6" Series

The arm rest bracket to which the rubber pad and upholstery is applied has two small grooved lugs. When the arm rest is installed on the door, these lugs are inserted in the keyway slot of the door inner panel, then moved toward the door lock pillar about ½ inch. The slots in the lugs slide in the keyway slot, which provides an upper anchorage for the arm rest. To fasten the arm rest to the door, two screws are inserted through the lower support arms of the arm rest bracket.

Removal Procedure

1. Remove two screws and washers at bottom of arm rest of door (Fig. 17).



1. Arm rest
2. Arm rest bracket
3. Screws

Figure 17—Door Arm Rest—Right Front Door.

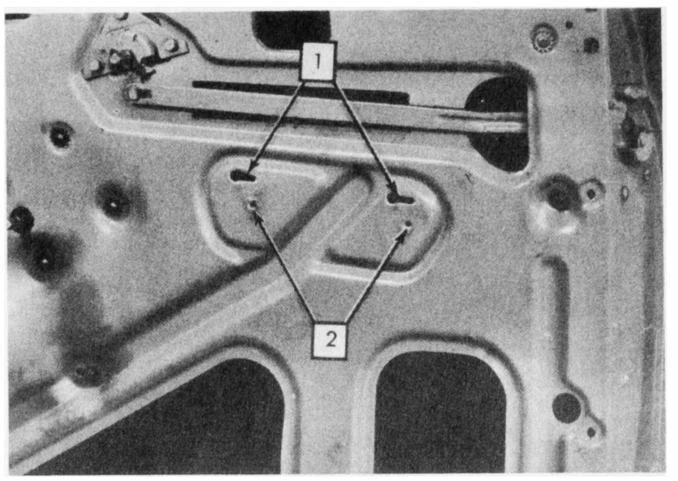
2. Push arm rest against door. Lightly tap or push arm rest about ½ inch toward hinge pillar. This will slide the arm rest lugs to the opening of the keyway slots and disengage them from the door inner panel (Fig. 17-A).

CAUTION: *Use care to see that the arm rest lugs do not tear the upholstery.*

To Install, Reverse Procedure

Lubrication

3. When installing arm rests, place stainless lubricant in grooves of arm rest lugs to prevent noise developing from metal-to-metal contact with door inner panel.



1. Keyway slots
2. Arm rest fastening screw holes

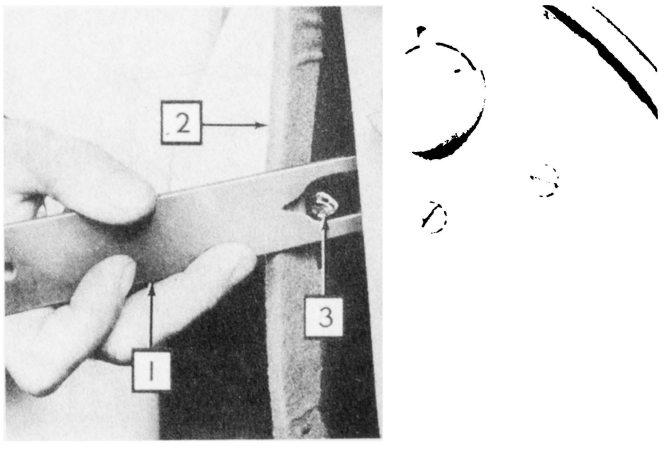
Figure 17-A—Arm Rest Keyway Slots—Right Front Door.

18. DOOR TRIM PANEL

1949 "600" and "Ambassador 6" Series

Removal Procedure

1. Remove finish molding (Subject 14).
2. Remove remote control and window regulator handles (Subject 15).
3. Remove ventilator handle on front doors (Subject 16).
4. Remove door arm rest on front doors (Subject 17).
5. Remove trim panel, by using handle depressor tool (J-2987) to lift fasteners from door inner panel, as shown in Figure 18. Avoid damage to fasteners or trim panel.



1. Depressor tool (J-2987)
2. Door trim panel
3. Fastener

Figure 18—Removing Door Trim Panel.

To Install, Reverse Procedure

CAUTION: *Care should be exercised when installing the trim panel. Be sure the clips line up with the holes in the door metal panel.* PRESS THE CLIPS IN. DO NOT HAMMER THEM.

19. CAR KEYS AND LOCK OPERATION

1949 "600" and "Ambassador 6" Series

Keys

The key locks are controlled by two keys. The octagon-head key operates the front door and ignition locks. The round-head key operates the glove compartment and trunk locks.

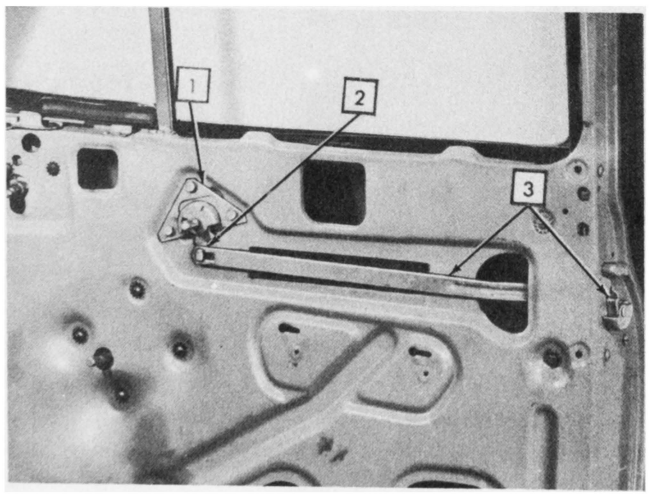
A code number, stamped on each key, tells the code number of the lock it operates. Coded keys are available in service when ordered by special part number. The code number stamped on the key should be furnished with the order.

Coded locks with keys are available in service when ordered by special part number for the lock wanted. The code number stamped on the keys should be furnished with the order.

20. REMOTE CONTROL—FRONT DOORS

1949 "600" and "Ambassador 6" Series

The front door remote control unit has only one coil spring, which serves as a handle return spring. This spring keeps the door lock operating lever in a neutral position (Fig. 20).



1. Remote control unit
2. Remote control operating lever
3. Lock and link

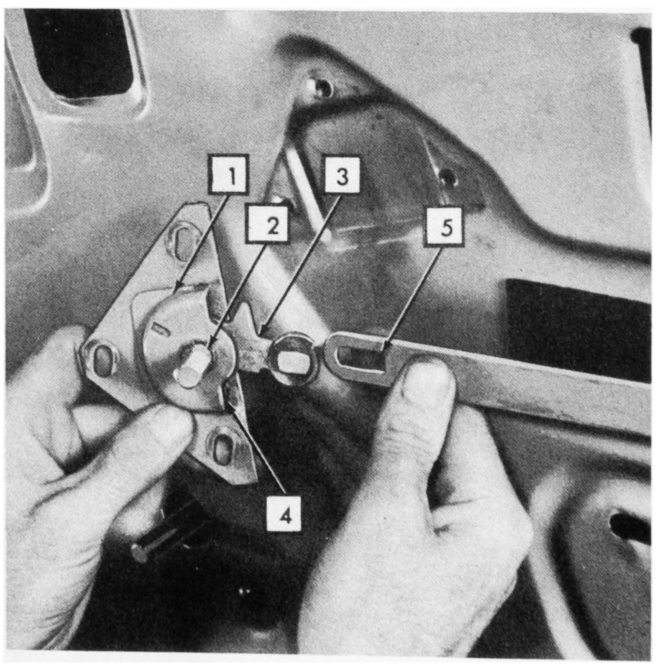
Figure 20—Remote Control and Lock Set in Neutral Position—Right Front Door.

When the remote control handle is pushed down, it moves the lock operating lever and lock link forward. This releases the door lock. The handle return spring will return the lock operating lever and lock link to the neutral position.

When the handle is raised, it moves the lock operating lever and link toward the door lock. This moves the door lock cams into a locked position. The handle return spring will return the lock operating lever and remote control handle to the neutral position without moving the locking cams. They will remain in a locked position until the remote control handle is moved to the full forward position for opening the door, or until the key is used to unlock the door.

Removal Procedure

1. Remove finish molding (Subject 19).
2. Remove remote control and window regulator handles (Subject 15).
3. Remove ventilator handle (Subject 16).
4. Remove arm rest (Subject 17).
5. Remove door trim panel (Subject 18).
6. Remove three screws in remote control unit of door inner panel. Turn remote control unit down and disconnect from link (Fig. 20-A).



1. Remote control unit
2. Handle shaft
3. Lock operating lever
4. Return spring
5. Link

Figure 20-A—Removing Remote Control Unit from Right Front Door.

Installation Procedure

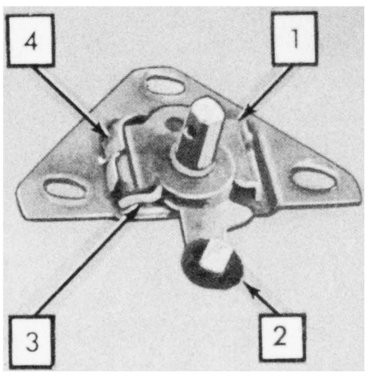
1. Apply Lubriplate to all bearing surfaces inside remote control unit.
2. Connect remote control lock operating lever to lock link.
3. Install three screws finger tight in remote control unit of door inner panel.
4. With the remote control lock operating lever in neutral position, adjust lock link to neutral position. To do this, move remote control and link toward hinge post until all free movement is taken up. Then tighten screws.

   CAUTION: *Before installing trim panel and hardware, check operations 5, 6 and 7, Installation Procedure,* REMOTE CONTROL — REAR DOOR.
5. Reverse removal procedure, items 1 through 5.

21. REMOTE CONTROL—REAR DOOR

1949 "600" and "Ambassador 6" Series

The rear door remote control unit has two springs. One, a coil spring, serves as a handle return spring. It returns the handle from the full open, or forward, position to the full locked, or raised, position (item 3, Fig. 21).



1. Remote control unit
2. Operating lever
3. Return spring
4. Remote control spring

Figure 21—Remote Control Unit—Right Rear Door.

The other, a remote control spring, serves as a counter spring. It retards the action of the coil spring on the control operating lever when the lever is being moved from the neutral position to the locked or raised position. This spring holds the handle in the locked position, until it is released by pushing the door handle down to the neutral position (item 4, Fig. 21).

Without the coil spring the handle would remain in the open position and the door would not latch when closed.

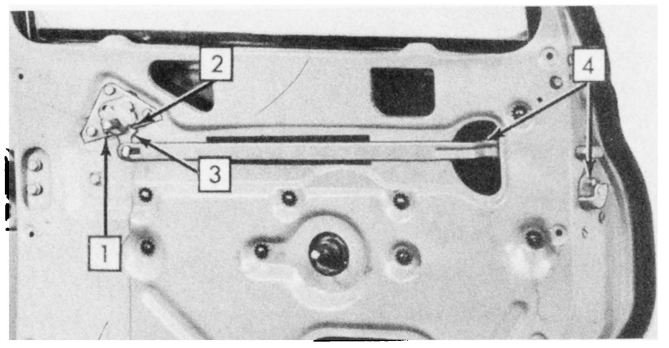
Without the remote control spring, the door would remain closed and locked until it was opened by the remote control handle.

Removal Procedure

1. Remove finish molding (Subject 14).
2. Remove remote control and window regulator handles (Subject 15).
3. Remove door trim panel (Subject 16).
4. Remove three screws holding remote control unit to door inner panel. Turn remote control unit down and disconnect from link (Fig. 20-A).

Installation Procedure

1. Apply Lubriplate to all bearing surfaces inside remote control unit.
2. Connect remote control lock operating lever to lock link.
3. Raise control operating lever (item 3, Fig. 21-A) against stop on remote control (item 2, Fig. 21-A). Move lock link toward lock as far as possible. (This places both units in a locked position.)



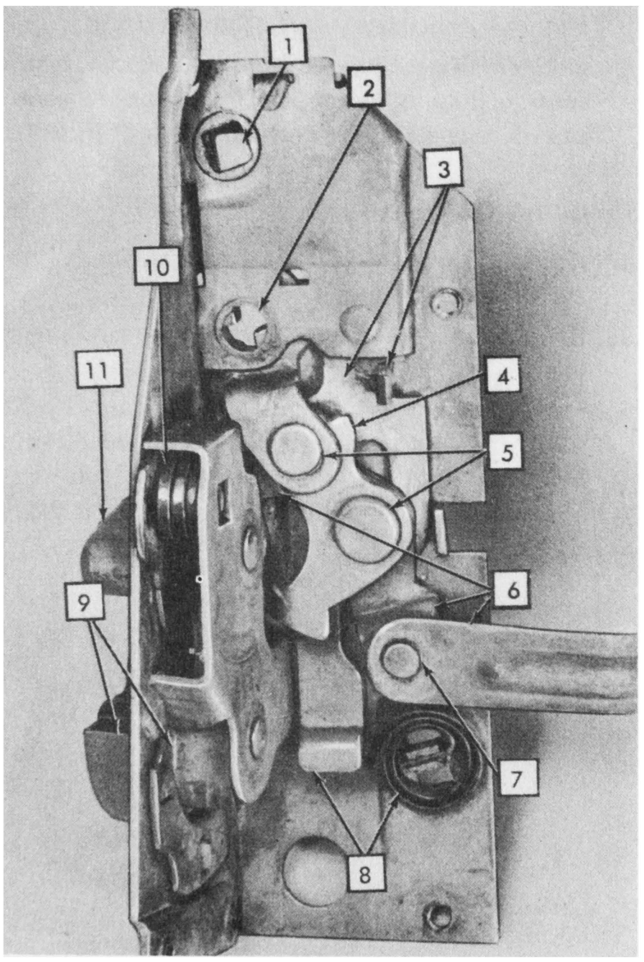
1. Remote control unit
2. Stop on remote control unit
3. Stop on operating lever
4. Lock and link

Figure 21-A—Installing Remote Control.

4. Install screws through remote control unit into door inner panel and tighten them.

   NOTE: *The elongated holes in the remote control unit permit proper adjustment.*
5. With window down and door closed, open door from inside, using remote control handle. If door lock does not release, move remote control *away* from door lock.

6. With window down and door open, raise remote control handle as if locking door from inside. Then close door. This should trip the locking device so that the door can be opened by using the outside door handle.
7. If door cannot be opened by outside door handle, move remote control unit *toward* door lock.
8. Install finish molding, remote control and window regulator handles, and trim panel.



1. Handle entrance and lock mechanism
2. Key lock entrance and mechanism
3. Handle shaft and stop
4. Stop on key lock cams
5. Key lock cams
6. Remote control link and link cams
7. Remote control link rivet
8. Handle return spring and lower end of handle shaft (item 3)
9. Lock rotor
10. Rotor springs and cams
11. Female dovetail

Figure 22—Right Front Door Lock and Link in Unlocked Position. Stop on Key Lock Cams (item 4) Moved in so that Stop on Handle Shaft (item 3) can move down.

22. DOOR LOCK—FRONT DOOR

1949 "600" and "Ambassador 6" Series

The door locks are rotor type and serve as a female dovetail. (Refer to the combination lock striker and male dovetail No. 40.)

Operation of Lock

Opening Door from Outside

When the outside door handle is turned (see Fig. 22) in the handle entrance and lock mechanism (item 1), this moves the lock handle shaft (items 3 and 8) downward. This releases the rotor springs and cams (item 10). In this position the door can be opened. The handle return spring (item 8) forces the handle shaft upward, returning the outside handle to the horizontal position.

Opening Door from Inside

When the remote control link (item 6) is pulled forward it moves the link cams down, releasing the rotor springs and cams (item 10). In this position the door can be opened. This is an independent operation of parts not controlled by the outside door handle.

Locking with Key Lock

When the key lock is turned in the lock, it moves the key lock cams back (item 5, Fig. 22). The stop on the key lock cam (item 4) is now under the handle shaft. In this position (item 3), it blocks any movement of the handle shaft.

Locking with Remote Control

When the remote control handle is raised for locking, it pushes the link and the link cams (item 6) in toward the lock (Fig. 22), moving the key lock cams (item 5) out. The stop (item 4) is now under the handle shaft stop (item 3, Fig. 22-A), blocking any movement of the outside handle.

Unlocking

When the door is locked, either by key or by remote control handle, the key lock cams are operated (item 5). Therefore, regardless of whether the door was locked by a key or the remote control, either of these will unlock the door.

Unlocking by Closing Door

The rotor springs and cams (item 10) are controlled by a lever contacting the key lock cams (item 5). Therefore if the door lock is locked by

key or remote control *while the door is open* the movement of the rotor in closing the door will move the key lock cams to the unlocked position. THE DOOR CAN ONLY BE LOCKED AFTER IT IS CLOSED.

This feature eliminates the possibility of locking the car and leaving the keys inside.

Removal Procedure

1. Remove belt molding (Subject 44).
2. Remove outside door handle (Subject 12).
3. Remove key lock (Subject 13).
4. Remove finish molding (Subject 14).
5. Remove remote control and window regulator handles (Subject 15).
6. Remove ventilator handle (Subject 16).
7. Remove arm rest (Subject 17).
8. Remove trim panel (Subject 18).
9. Remove remote control (Fig. 20-A).
10. Raise glass.
11. Remove screw holding bottom of glass channel retainer to door on lock side.
12. Remove screws holding lock to door.
13. Push lock to inside of door, and move below glass channel retainer. Remove through opening in door inner panel, as shown in Figure 22-B.

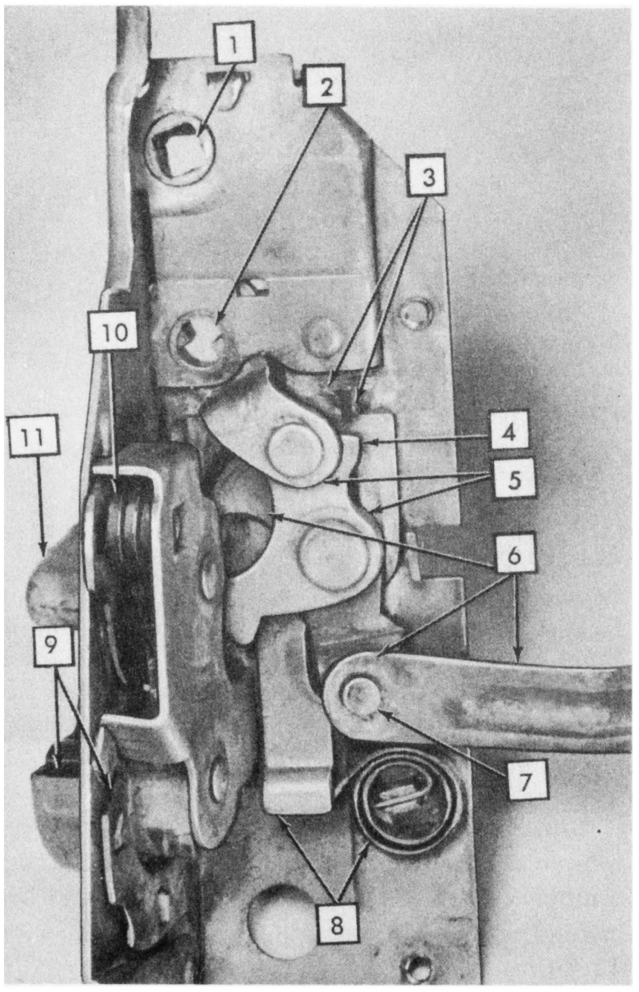
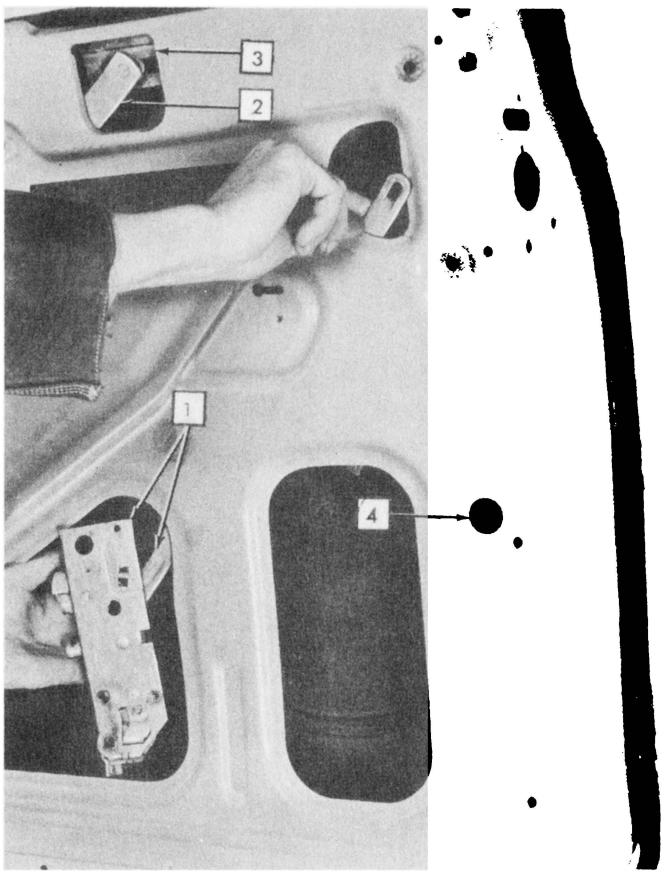


Figure 22-A—Right Front Door Lock and Link in Lock Position, No. 4 Stop on Key Lock Cams out and under No. 3 Stop on Handle Shaft.

NOTE: Numbered items of Figure 22 are also reference numbers for Figure 22-A.



1. Lock and link assembly
2. Window regulator arm
3. Glass bottom channel
4. Glass slide channel screw

Figure 22-B—Removing Door Lock and Link—Right Front Door.

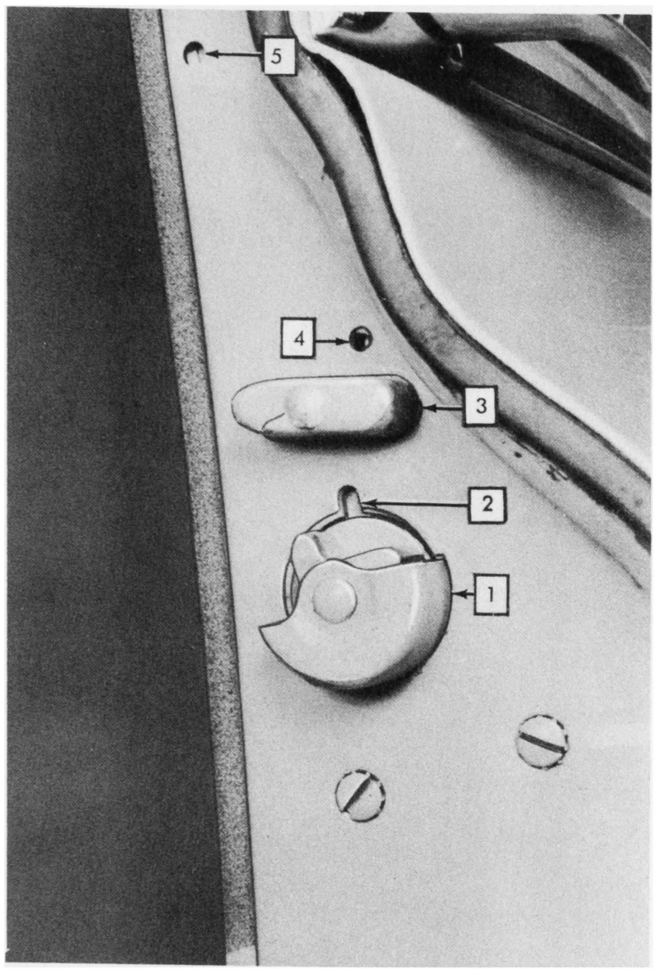
To Replace, Reverse Removal Procedure

14. Clean and lubricate lock before installing. Refer to DOOR LOCK LUBRICATION, Paragraph 3, below.

CAUTION: *Check the operation of the door handle, cylinder lock and inside remote control before installing trim panel and hardware. Refer to* REMOTE CONTROL, REAR DOOR, Subject 21, Installation Procedure Operations 5, 6 and 7.

Maintenance and Lubrication

1. Lubricate both sides of striker and rotor with Lubriplate.
2. Lubricate door lock mechanism, lock cams and rotor through three holes provided in face of door lock pillar. Use light motor oil. See Figure 22-C.



1. Rotor
2. Oil hole for rotor
3. Female dovetail
4. Oil hole for lock cams
5. Oil hole for lock mechanism

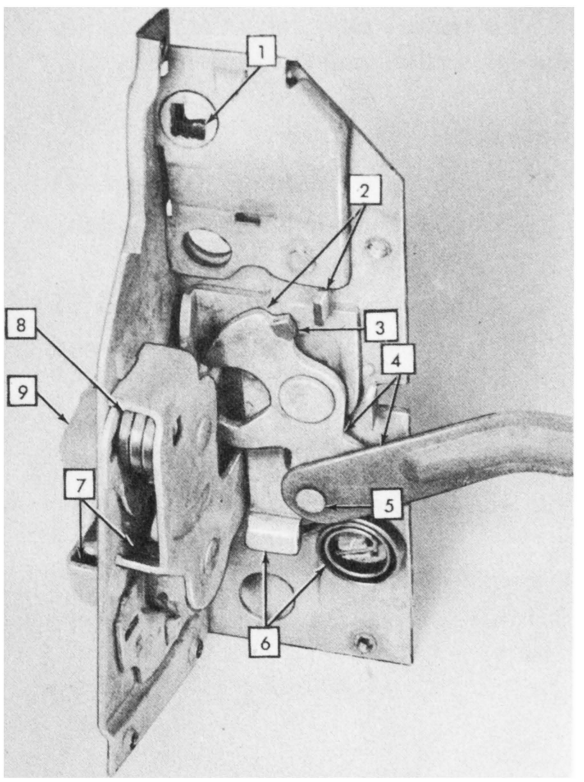
Figure 22-C—Door Lock Lubrication.

3. When lock has been removed, wash it with gasoline, then dry with air. Remove all dust, dirt and gum. Then apply Lubriplate to all working parts of lock.

23. REAR DOOR LOCKS

1949 "600" and "Ambassador 6" Series

The rear door locks are similar to the front door locks with the exception of the key lock entrance mechanism (item 2). Key lock cams (item 5) are shown in Figures 22 and 22-A.



1. Handle entrance and lock mechanism
2. Handle shaft and stop
3. Stop on remote control link cam
4. Remote control link and link cam
5. Remote control link rivet
6. Handle return spring and lower end of handle shaft (item 2)
7. Lock rotor
8. Rotor springs and cams
9. Female dovetail

Figure 23—Right Rear Door Lock and Link in Unlocked Position. Stop on Remote Control Link Cam (item 3) moved in so Stop on Handle Shaft (item 2) can be Moved Down.

NOTE: Numbered items for Figure 23 are also reference numbers for Figure 23-A.

These doors can only be locked by raising the remote control handle. Therefore the stop is on the remote control link cam (item 3, Figs. 23 and 23-A) instead of key lock cams (item 4, Figs. 22 and 22-A).

Removal Procedure

1. Remove finish molding (Subject 14).
2. Remove remote control and window regulator handles (Subject 15).

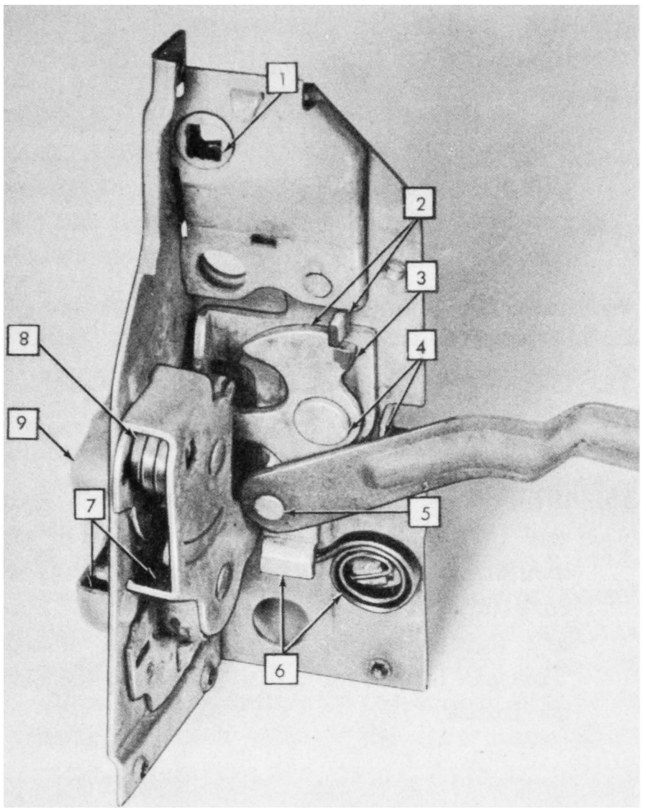
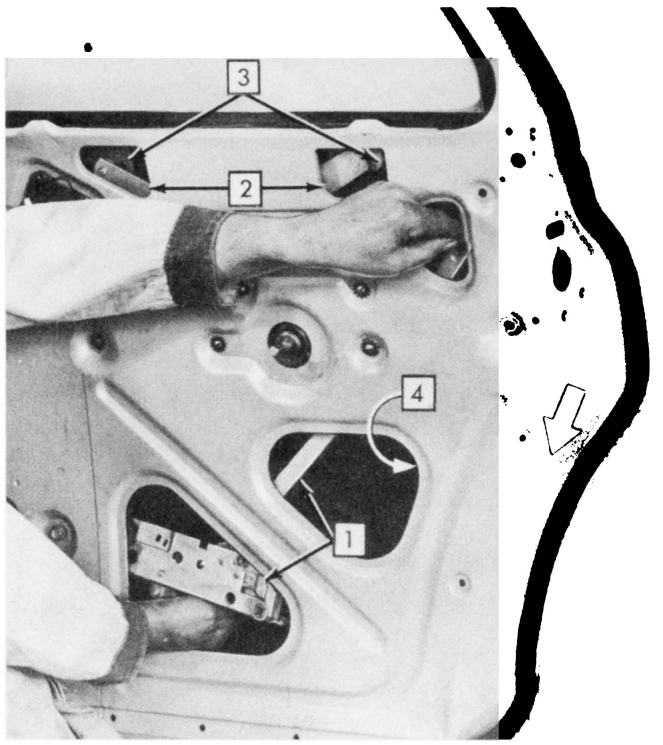


Figure 23-A—Right Rear Door Lock and Link in Locked Position. Stop on Remote Control Link Cam (item 3) moved out and under Stop on Handle Shaft (item 2). Refer to Figure 23 for Identification.

3. Remove door trim panel (Subject 18).
4. Remove door belt molding (Subject 44).
5. Remove outside door handle (Subject 12).
6. Raise door glass.
7. Remove screw holding side glass channel to door lock post at bottom (item 4, Fig. 23-B).
8. Remove remote control (Fig. 20-A).
9. Remove screws holding lock to door.
10. Push lock to inside of door and lower below glass channel retainer, removing lock through opening in door.
11. Clean and lubricate lock before installing. Refer to DOOR LOCK LUBRICATION, Subject 22, Paragraph 3.

To Replace, Reverse Removal Procedure

CAUTION: *Check operation of the door handle and the inside remote control before installing the trim panel and hardware. Refer to* REMOTE CONTROL, REAR DOOR, Subject 21, Installation Procedure Operations 5, 6 and 7.



1. Lock and link assembly
2. Window regulator arms
3. Glass bottom channel
4. Glass slide channel screw

Figure 23-B—Removing Door Lock and Link—Right Rear Door.

Lubrication

See DOOR LOCK LUBRICATION, Subject 22, Figure 22-C, Page 22.

24. FRONT DOOR VENTILATOR ASSEMBLY

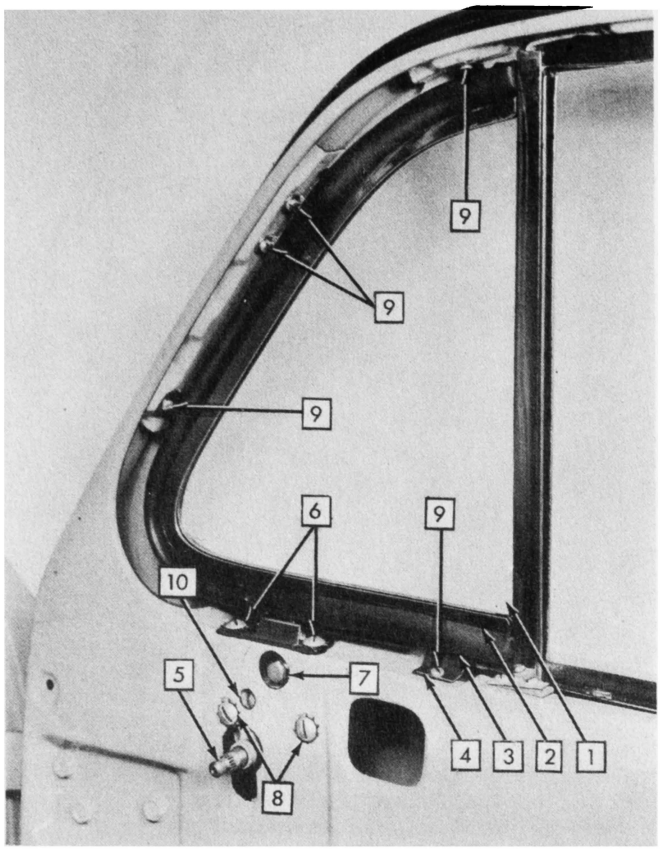
1949 "600" and "Ambassador 6" Series

The front door ventilator assembly (Fig. 24) consists of the glass (item 1), chrome frame (item 2), sealer rubber (item 3), and steel frame (item 4) assembled as one unit. The control (item 5) is another unit. Each of these units is serviced complete or in individual parts. The control unit is installed after the frame assembly is set into place in the door. In disassembly it should be removed before the frame assembly is removed.

Removal Procedure

Ventilator Control Removal

1. Remove finish molding (Subject 14).
2. Remove ventilator handle (Subject 15).



1. Glass (curved)
2. Chrome frame
3. Sealer rubber
4. Steel frame channel
5. Control
6. Screws—channel to control
7. Screw—frame shaft to control
8. Screws—control to door
9. Screws—steel frame to door
10. Handle adjustment screw

Figure 24—Front Door Ventilator Assembly.

3. Loosen door trim panel, hinge side only.
4. Remove two screws (item 6) holding ventilator channel to ventilator control.
5. Remove one screw (item 7) holding ventilator glass frame shaft to ventilator control.
6. Remove two screws (item 8) holding ventilator control to door inner panel. Lower the control unit until disengaged from glass frame shaft, and remove from door.

Ventilator Glass Frame and Channel Removal

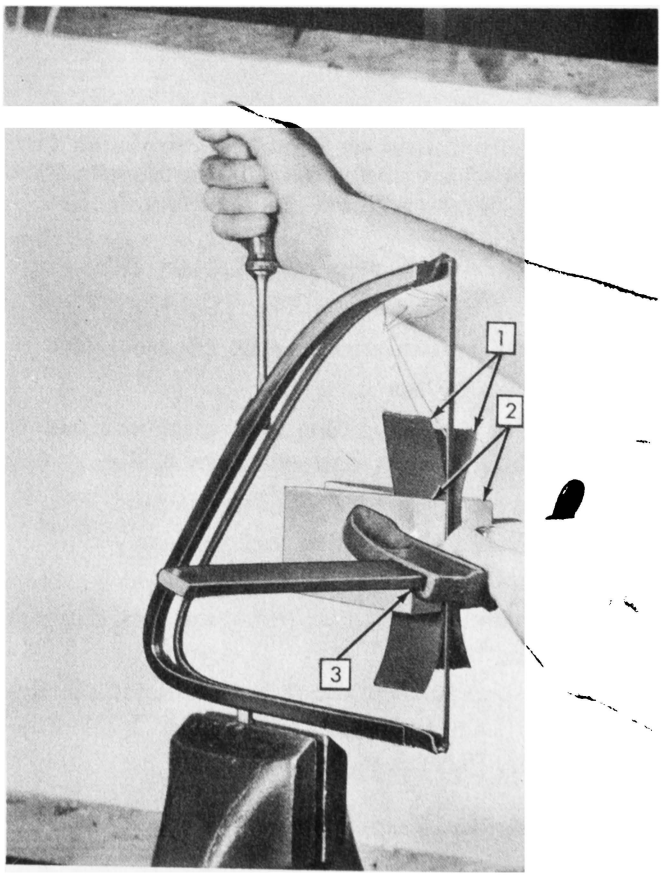
7. Follow vent control removal.
8. Remove five screws holding ventilator channel to door. (item 9, Fig. 24).
9. Open glass about 1". Pull top of ventilator channel toward inside of body, lifting complete unit out of door.

Ventilator Glass and Frame Removal

10. Follow ventilator control removal and ventilator glass frame and channel removal.
11. Spring top of ventilator channel enough to release upper pivot on glass frame.
12. Lift glass and frame enough to disengage lower pivot from slot in ventilator channel and sealer rubber.

Ventilator Glass Removal from Chrome Fr ıme after Unit is Removed from Assembly

13. Clamp bottom pivot in vise (Fig. 24-A).
14. Slightly spread top and bottom of frame away from glass.
15. With two small blocks of wood about 3" square and 1" thick, apply one on each side of glass, insulating between wood block and glass with cork tape or strips of rubber. Use "C" clamp and tighten against the two blocks of wood. This will form a handle to pull the glass out of the frame.



1. Cork tape
2. Two wood blocks
3. Clamp

Figure 24-A—Removing Broken Glass from Ventilator Frame.

Ventilator Glass Removal from Chrome Frame

16. This may be accomplished with ventilator in door and no other parts removed. Open ventilator glass as far as possible and proceed with operation No. 15, under "Ventilator Glass Removal from Chrome Frame after Unit is Removed from Assembly", Page 24.

Adjustments

17. Excessive or insufficient play for easy operation of handle is controlled by adjustment screw (item 10, Fig. 24). Turn screw in to increase tension.
18. Excessive play in the glass frame may develop due to looseness of glass frame shaft in the box connection of the control unit.
19. Remove control unit if adjustment screw, holding ventilator frame shaft to ventilator control unit, is not effective. With a hack saw, slot box section at each end (Fig. 24-B). This will allow the box section of the control unit to fit snugly to both sides of the glass frame shaft when tightening the frame shaft to control screw (item 7, Fig. 24).

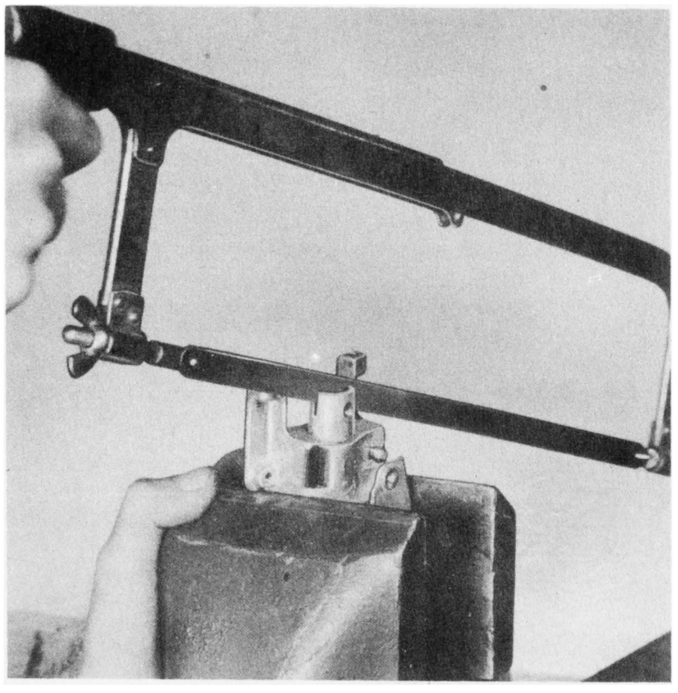


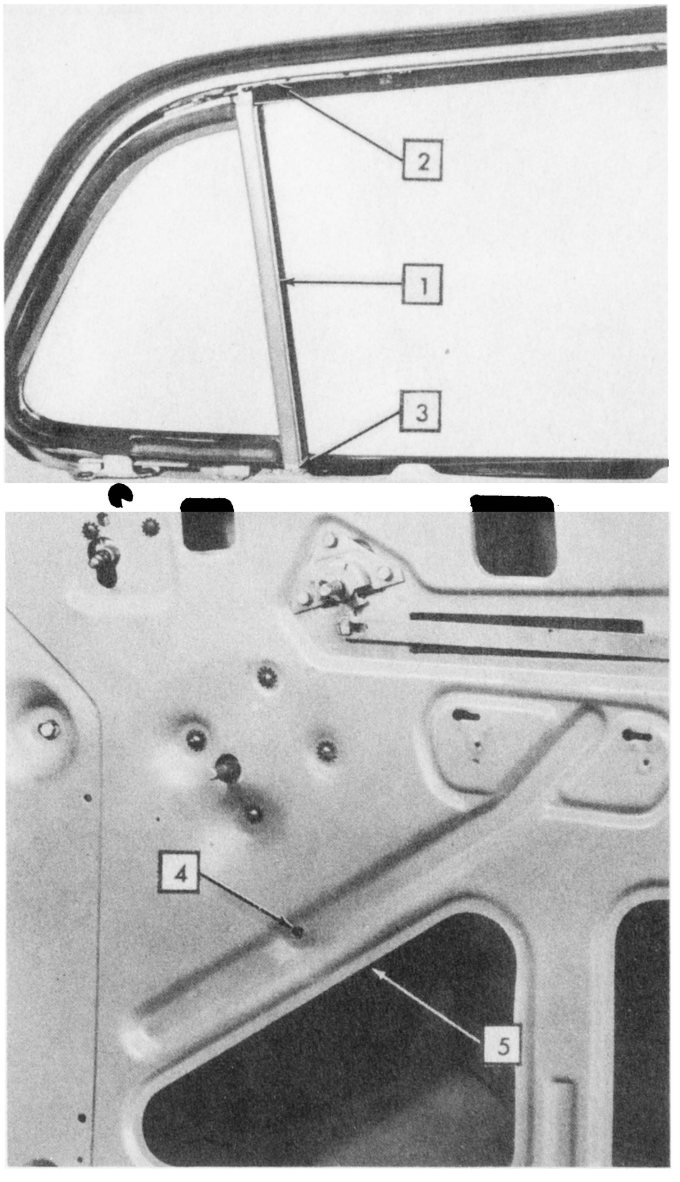
Figure 24-B—Sawing Slot in Ventilator Control Shaft Socket for Tightening Shaft.

20. Correct the opening between glass frame and ventilator channel by inserting flat washers between ventilator channel brackets and door. As there are five brackets, shim under bracket closest to opening.
21. To straighten ventilator unit in door, remove screws holding channel to door, loosen screws holding control to door, and shift complete unit as necessary. Tighten all screws.

25. VENTILATOR CENTER GLASS CHANNEL—FRONT DOORS

1949 "600" and "Ambassador 6" Series

The ventilator glass, when closed, bears against a rubber seal. This rubber seal also serves as a glass channel for the front edge of the door glass.

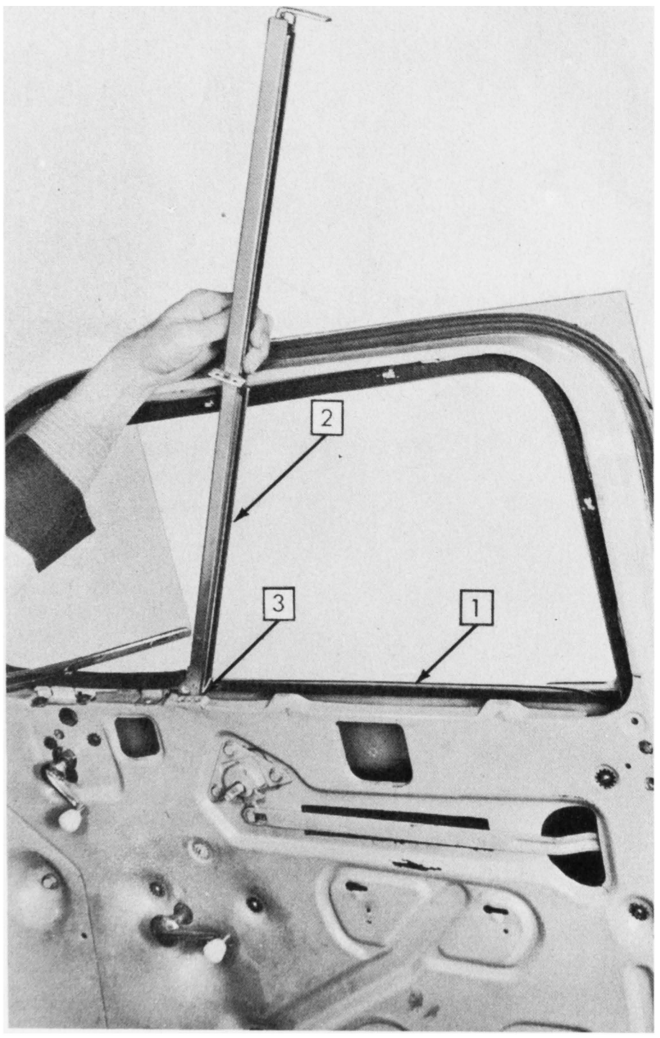


1. Ventilator center glass channel assembly
2. Channel screws to door header
3. Channel screws to top of door inner panel
4. Adjustable nut
5. Adjustable support stud (inside door)

Figure 25—Ventilator Center Glass Channel Assembly—Front Doors.

Removal Procedure

1. Remove finish molding (Subject 14).
2. Remove remote control and window regulator handle (Subject 15).
3. Remove front door ventilator handle (Subject 16).
4. Remove front door arm rest (Subject 17).
5. Remove door trim panel (Subject 18).
6. Remove screws holding glass center channel to door header and screws holding glass channel to top of door inner panel, also glass center channel support stud and adjusting nut. Lift glass center channel from door (Figs. 25 and 25-A).

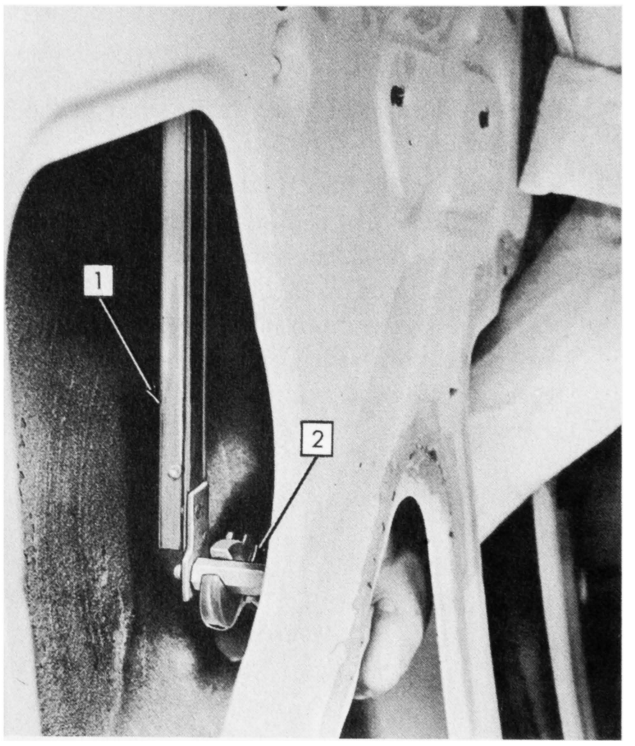


1. Door glass in lowered position
2. Channel in raised position
3. Bottom of channel between ventilator rubber and door glass

Figure 25-A—Removing Ventilator Center Glass Channel Assembly.

Adjustment

7. Adjust center channel support stud in or out at bottom so that glass will travel straight up and down in channel and not bind on either side (item 5, Fig. 25).
8. An elongated hole is provided in the door inner panel whereby this channel may be adjusted against the edge of the glass and the lock nut tightened to hold the adjustment selected (Fig. 25-B).



1. Ventilator glass channel at the bottom
2. Support stud

Figure 25-B—Removing, Installing, or Adjusting.

Lubrication

9. Use powdered or flake graphite in glass channel. Never use oil or wax.

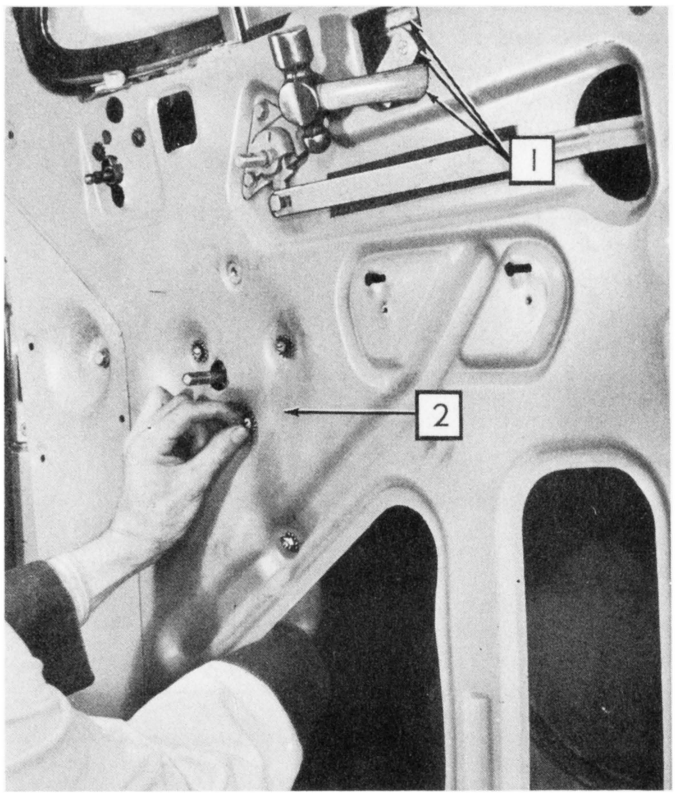
26. WINDOW REGULATOR—FRONT DOOR SEDAN

1949 "600" and "Ambassador 6" Series

Removal Procedure

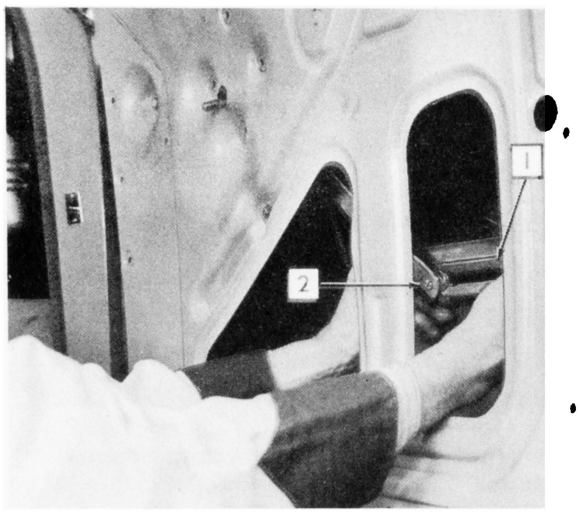
1. Remove finish molding (Subject 14).
2. Remove remote control and window regulator handles (Subject 15).
3. Remove ventilator handle (Subject 16).

4. Remove door arm rest (Subject 17).
5. Remove door trim panel.
6. Raise door glass, and wedge with hammer handle (Fig. 26).



1. Glass raised and wedged with hammer handle
2. Removing screws holding regulator to door inner panel.

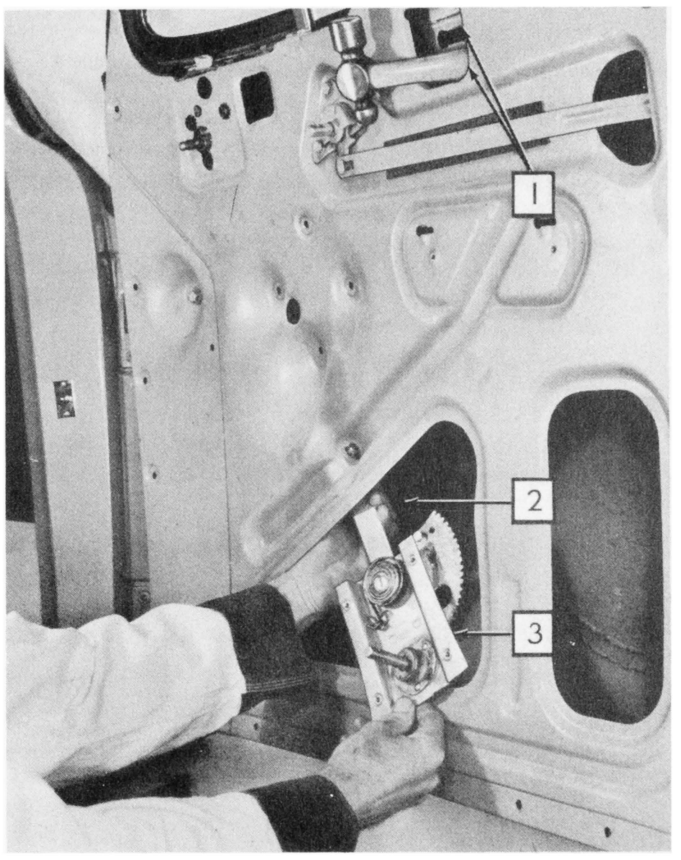
Figure 26—Removing Window Regulator—Front Door, Sedan.



1. Glass Bottom channel
2. Regulator arm

Figure 26-A—Removing Window Regulator Arm from Glass Bottom Channel—Front Door, Sedan.

7. Remove screws from regulator unit.
8. Remove wedge holding glass in raised position. Lower glass by hand, allowing regulator arm to slide in glass bottom channel.
9. Disengage regulator arm from glass bottom channel in full lowered position (Fig. 26-A).
10. Raise glass by hand and wedge with hammer handle (Fig. 26-B).
11. Guide regulator arm between door inner panel and center division bar, removing regulator through door panel opening (Fig. 26-B).



1. Glass wedged in raised position by hammer.
2. Guiding regulator arm between door panel and center division bar.
3. Removing regulator through door panel opening (with regulator arm cranked on regulator to raised position).

Figure 26-B—Removing Window Regulator from Front Door—Sedan.

27. WINDOW REGULATOR AND GLASS —BROUGHAM DOORS

1949 "600" and "Ambassador 6" Series

Window Regulator—Brougham Door

The Brougham door window regulator is fastened to the door inner panel with five screws.

The window regulator arm studs, which extend through the glass bottom channel slots, are grooved. They are held to the bottom channel by retainers as shown in SEDAN REAR DOORS, Subject 28.

These units on the Brougham doors are exposed for observation. They are easily removed to disengage the regulator arms from the glass bottom channel.

No. 1—Brougham Door Glass

Removal Procedure—No. 1

1. Remove finish molding (Subject 14).
2. Loosen door trim panel at top (by loosening top trim panel fastener on door hinge and lock pillars).
3. Raise glass until both window regulator arm studs and retainers appear at cut-outs in top of door inner panel.
4. Remove retainers from arms studs, and remove arm studs from slots in glass bottom channel, holding glass in raised position.
5. Crank window regulator lowering arms to full down position.
6. Tilt glass toward lock pillar and remove from door as shown in Figure 28-C.

No. 2—Brougham Door Window Regulator Removal

Procedure—No. 2, after Glass Removal Procedure No. 1.

1. Remove ventilator handle (Subject 16).
2. Remove window regulator and remote control handles (Subject 15).
3. Remove arm rest (Subject 17).
4. Remove door trim panel (Subject 18).
5. Crank window regulator until arms fold parallel with regulator body.
6. Remove screws holding regulator to door inner panel, and remove regulator through large opening in door inner panel.

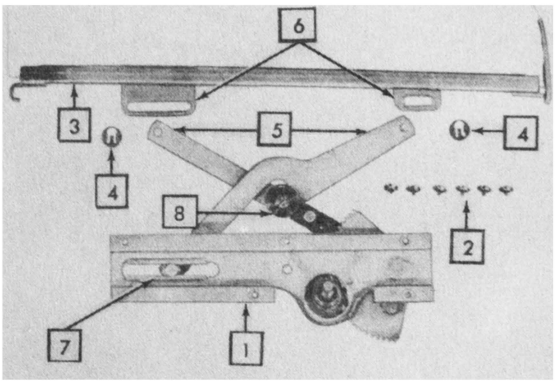
28. REAR DOOR WINDOW REGULATOR

1949 "600" and "Ambassador 6" Series

The rear door window regulator is fastened to the door inner panel with six screws.

The window regulator arm studs, which extend through the glass bottom channel slots, are grooved and are fastened to the bottom glass channel by retainers (See item 4, Fig. 28).

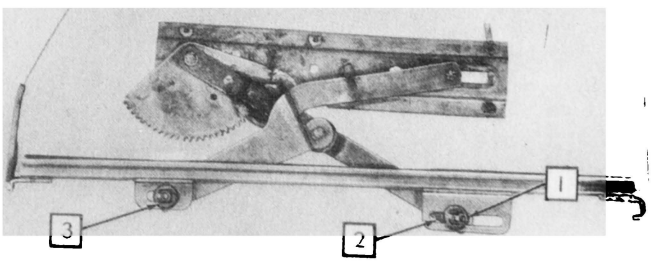
The retainers have an opening whereby they may be placed over the end of the studs, and they have a straight slot that will engage the groove in the stud with a sliding action. When the retainers have been set in the proper position, a small projection or cap in the center of the retainer locks itself over the concave end of the stud. This holds the regulator arms in the bottom channel grooves (Fig. 28).



1. Window regulator
2. Window regulator screws
3. Glass bottom channel
4. Regulator arm to bottom channel retainers
5. Regulator arm studs
6. Bottom glass channel regulator arm slots
7. Arm to regulator slot
8. Coil spring

Figure 28—Rear Door Window Regulator and Glass Assembly—in Raised Position.

Since these units are not exposed for observation it is important to know this construction before removing or replacing them.

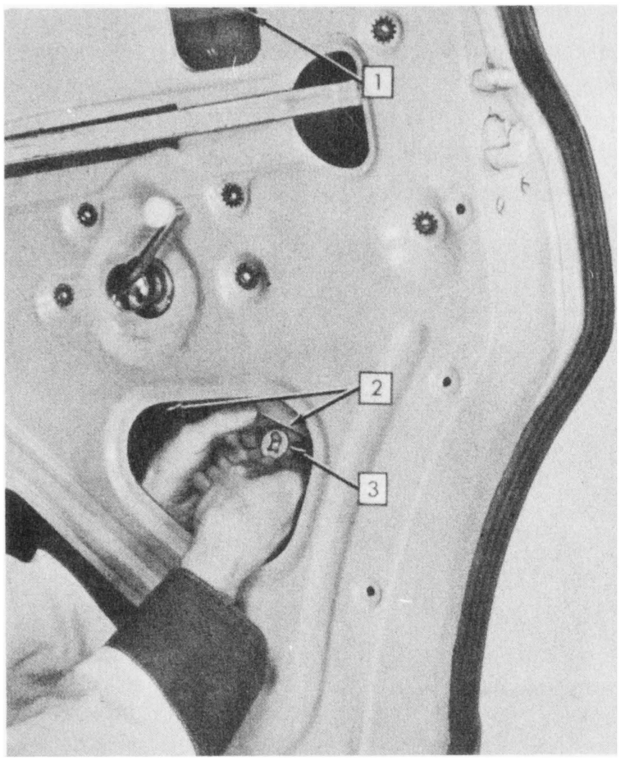


1. Window regulator arm stud in bottom channel
2. Retainer set on stud with inside slot flange of retainer started into groove of stud
3. Retainer in locked position — with cap of retainer over end of stud

Figure 28-A—Right Rear Door Window Regulator Arms Installed in Glass Bottom Channel in Lowered Position. View Looking through Door Outer Panel.

Removal Procedure

1. Remove finish molding (Subject 14).
2. Remove remote control and window regulator handles (Subject 15).
3. Remove door trim panel (Subject 18).
4. Lower glass to full down position.
5. Remove retainers from window regulator arm studs (Fig. 28-A).
6. Remove regulator arms from glass bottom channel (Fig. 28-B).



1. Glass in lowered position
2. Window regulator arms
3. Window regulator arm stud to bottom channel retainer removed

Figure 28-B—Removing Rear Door Regulator Arm Stud Retainers and Studs from Glass Bottom Channel.

7. Push glass up in slide channels to top of door, tilting toward lock pillar, and remove from door (Fig. 28-C).
8. Crank arms, with regulator handle, to folded position in line with regulator body (Fig. 28-D).
9. Remove six screws holding regulator to door inner panel.
10. Tilt regulator toward lock side of door and remove through large opening in door inner panel (Fig. 28-E).

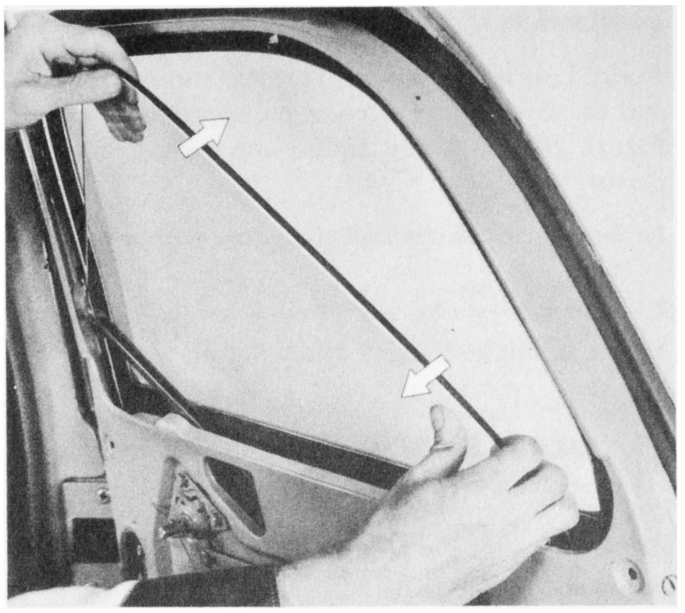


Figure 28-C—Removing Glass from Rear Door after Regulator Arms have been Removed from Bottom Channel while in Lowered Position. Glass Tilted toward Lock Post for Removal.

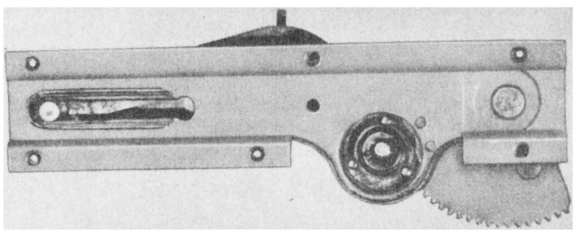


Figure 28-D—Rear Door Window Regulator with Arms folded in Line with Regulator Body.

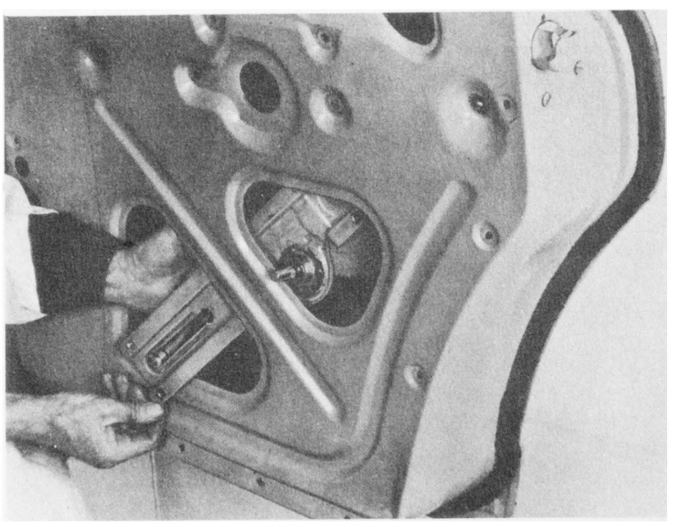


Figure 28-E—Removing Rear Door Window Regulator.

To Replace, Reverse Removal Procedure

Lubrication

Apply Lubriplate to teeth in drive and driven gears and to all points of friction on regulator. Refer to Figure 28 and apply Lubriplate to the following places:

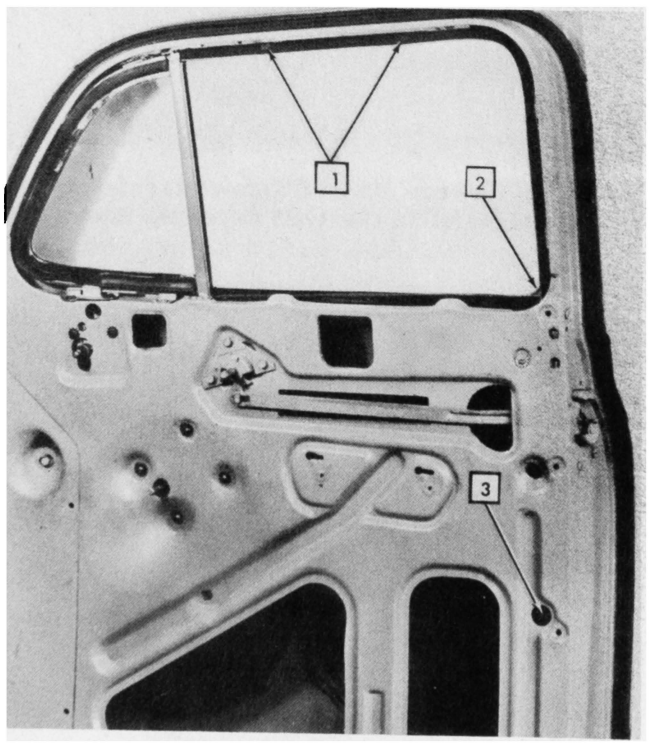
1. Bottom glass channel regulator arm slots (item 6).
2. Arm to regulator slot (item 7).
3. Regulator coil spring (item 8).

29. GLASS SLIDE AND HEADER CHANNEL —FRONT DOOR

1949 "600" and "Ambassador 6" Series

Removal Procedure

1. Remove finish molding (Subject 14).
2. Remove front door arm rest (Subject 17).
3. Loosen door trim panel along lock side and bottom of door.
4. Remove screw in channel of door, located about 2" above bottom of window opening on lock side. (item 2, Figure 29).
5. Remove screw holding bottom of glass channel retainer to door (item 3, Figs. 29 and 29-A).
6. With glass in lowered position, carefully pull glass channel away from top of door, releasing channel clips.
7. Remove any shims behind glass channel (Fig. 30-A).
8. Remove channel from door by raising and lowering door glass from the down position upward about 6" and steadily lifting upward on channel.



1. Clips—(on channel)
2. Screw channel to door
3. Screw retainer to door

Figure 29—Front Door. Glass Slide and Header Channel, Fastening Clips and Screws.

To Replace, Reverse Removal Procedure

CAUTION: *Before installing screw through glass channel to door, check side movement of glass in channels. If it is excessive, insert shim between channel retainer and channel as necessary for snug fit (Fig. 30-A).*

Lubrication

9. Use powdered or flake graphite in glass channels. Never use oil or wax.

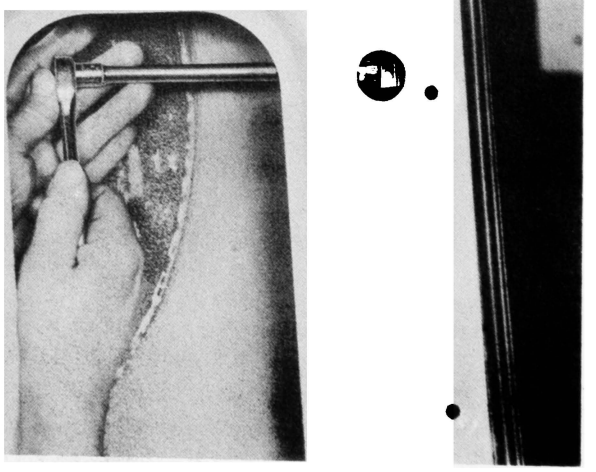


Figure 29-A—Removing or Installing Glass Channel Retainer Screw on Lock Side, All Doors; and Hinge Side, Rear Doors.

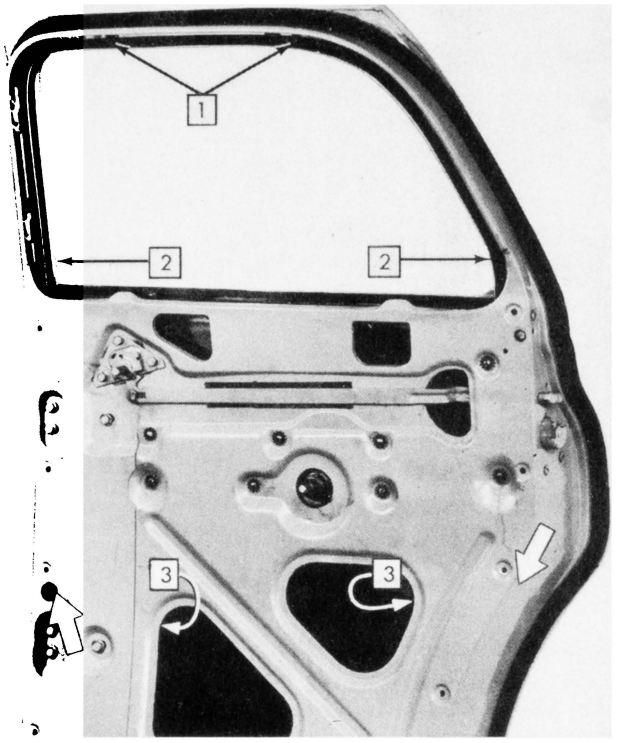
30. GLASS SLIDE AND HEADER CHANNEL —REAR DOORS

1949 "600" and "Ambassador 6" Series

Removal Procedure

1. Remove finish molding (Subject 14).
2. Loosen door trim panel along both sides and bottom.

3. Remove screws holding bottom of glass slide channel retainer on door lock and hinge posts (item 3, Fig. 30).



1. Clips
2. Channel to door screws
3. Retainer to door screws

Figure 30—Glass Slide and Header Channel Fastening Clips and Screws—Rear Door.

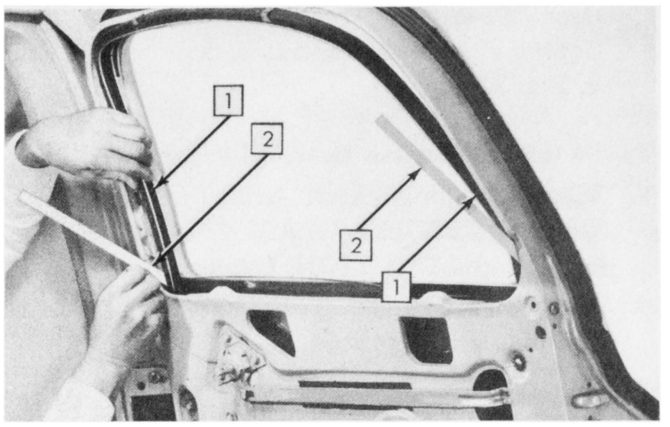
4. Remove screws, glass channel to door, located about 2″ above bottom of window opening on hinge and lock posts.
5. Carefully pull glass channel from top of door, releasing channel clips from door.
6. Remove any shims behind glass channel.
7. Lift up on glass channel while raising door glass about 6″ to remove channel from door.

To Replace, Reverse Removal Procedure

CAUTION: *Before installing the screws, check the side movement of the glass in the channel. If it is excessive, insert a shim between the channel and channel retainer on both sides as necessary for a snug fit (Fig. 30-A).*

Lubrication

8. Use powdered or flake graphite in glass channel. Never use oil or wax.



1. Glass channel
2. Shims

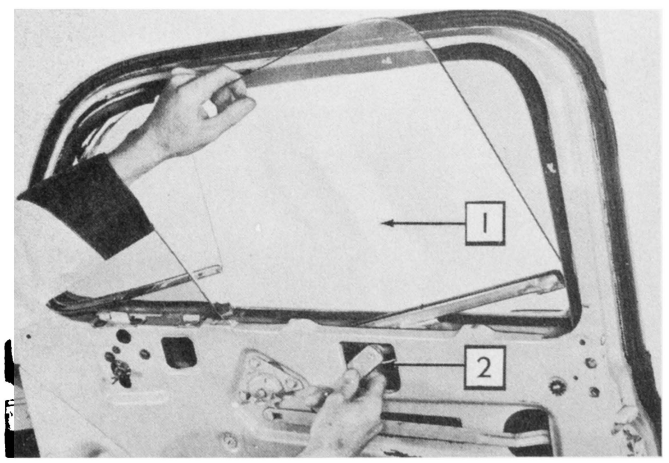
Figure 30-A—Removing or Installing Glass Slide and Header Channel and Shims.

31. DOOR GLASS—FRONT DOOR

1949 "600" and "Ambassador 6" Series

Removal Procedure

1. Remove finish molding (Subject 14).
2. Remove remote control and window regulator handles (Subject 15).
3. Remove ventilator handle (Subject 16).
4. Remove arm rest (Subject 17).
5. Remove trim panel (Subject 18).
6. Remove ventilator center glass channel (Subject 25).
7. With ventilator glass open, raise door glass, pull top to inside, and tilt front edge toward front of



1. Glass raised to full up position, top tilted away from door and toward hinge pillar
2. Window regulator arm can be removed from bottom channel

Figure 31—Removing Front Door Glass.

door, disengaging regulator arm from glass bottom channel at cut out in door panel (item 2, Fig. 31).

8. **To install, Reverse Removal Procedure**
9. When installing, check *Adjustments,* VENTILATOR CENTER GLASS CHANNEL, Subject 25, and CAUTION, Subject 29.
10. Apply Lubriplate to glass bottom channel slot and regulator arm stud.

32. DOOR GLASS—REAR DOOR

1949 "600" and "Ambassador 6" Series

Removal Procedure

Refer to Subject 28 and Figures 28, 28-A, 28-B and 28-C, Rear Door Window Regulator, and follow operations 1 through 7 inclusive. Lubricate regulator arm studs in glass bottom channel slots.

33. REAR QUARTER VENTILATOR ASSEMBLY

1949 "600" and "Ambassador 6" Series

Removal Procedure

1. Remove all visible screws in finish molding.
2. Open ventilator glass, and pull lip of channel rubber down (Fig. 33), releasing window assembly from flange of window opening. Then pull top part of assembly to inside of car and lift complete unit from window opening.

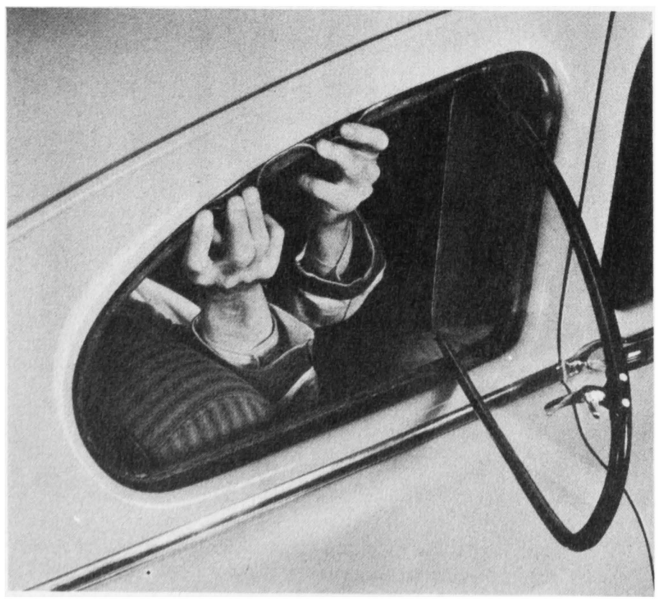
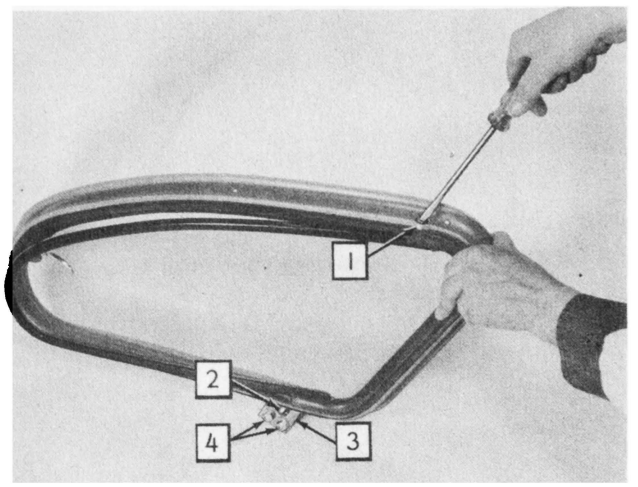


Figure 33—Removing Rear Quarter Ventilator Assembly.

To Remove Glass and Frame Assembly from Finish Molding Frame Assembly

3. Remove two bolts holding friction plate, releasing glass frame pivot (Fig. 33-A).



1. Upper pivot shoulder screw
2. Glass frame pivot
3. Friction bracket and plate
4. Bolts

Figure 33-A—Removing Glass and Frame Assembly from Finish Molding Frame Assembly.

4. Remove top pivot shoulder screw.
5. Remove glass and frame from top of finish molding assembly and lift up, disengaging lower pivot from slot in bottom of finish molding assembly.

Ventilator Glass Removal from Frame after Unit is Removed from Finish Molding Frame Assembly

6. Clamp bottom pivot in vise.
7. Spread top and bottom of glass frame slightly away from glass.
8. Take two small blocks of wood about 3" square and 1" thick. Apply one on each side of glass, inserting cork tape or strips of rubber between wood blocks and glass. Tighten a "C" clamp over blocks of wood. This will form handle to pull glass out of frame. See Figure 24-A, Subject 24, Page 24.

Ventilator Glass Removal from Frame without Removing Complete Assembly from Car

9. With ventilator in body and no other parts removed, ventilator glass may be removed by

opening ventilator as far as possible and proceeding as described in operations 7 and 8 above.

Adjustment

10. Tightening of friction bracket and plate against glass frame pivot (item 2, Fig. 33-A), should be sufficient to hold ventilator open while driving, but not enough to bind lower pivot, causing window to operate hard.

For Replacement of Complete Unit Into Window Opening

11. Tie a small cord in groove or lip of rubber weatherstrip, allowing loose ends of cord to extend out at top front corner of assembly (Fig. 33-B). When complete unit is anchored in position, pull out cord which will lift lip of rubber out and over window ledge, as shown in Figure 33-C.

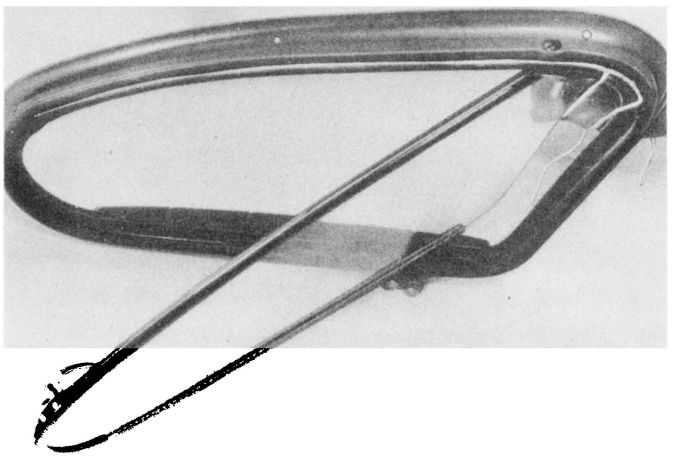


Figure 33-B—Installing Cord in Groove or Lip of Rubber Weatherstrip—Rear Quarter Ventilator.



Figure 33-C—Installing Rear Quarter Ventilator Assembly Lifting Lip of Rubber Weatherstrip over Flange of Window Opening.

Adjustment of Glass and Frame Assembly in Finish Molding Frame Assembly

12. Before tightening screws that fasten unit to body, open and close window to determine if it is binding on rubber weatherstrip.

    If binding at top or bottom: Top and bottom screws should be tightened first to draw finish molding frame up and down to provide clearance.

    If binding at front or rear edge of glass or frame: Tighten screws at front and rear of finish molding frame first to provide clearance. *Do not tighten* screws excessively, as this will distort finish molding frame and cause glass frame to rub on rubber weatherstrip when opening or closing. A uniform clearance between glass frame and finish molding frame at top, bottom, front and rear must be maintained. This can be accomplished only through proper spacing of glass frame in finish molding, before tightening friction bracket to lower pivot, and through proper spacing of finish molding frame in window opening. The latter spacing is obtained by adjusting the screws holding finish molding in window opening.

Lubrication

13. When installing or servicing this assembly the lower pivot should be lubricated with Lubriplate (Fig. 33-A).

34. DOOR CHECKS AND STOPS

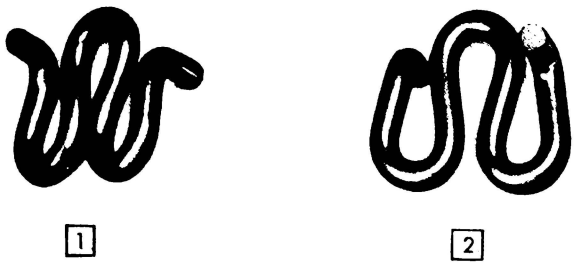
1949 "600" and "Ambassador 6" Series

All doors are provided with door checks and stops. These features are incorporated in the door hinges. "W" shaped springs are in each hinge. These serve as a door check to hold the door in the full open position and to assist in closing the door after they are released from the open position setting (Fig. 34).

Door stops are built into the hinges. They are set to a relatively safe position: They allow the door to open sufficiently, yet prohibit it from opening so far that it would contact the body and cause damage to the door or body panels.

The door checks or hinge springs are replaceable. Refer to Subjects 35 and 36.

The door stop is a part of the hinge which requires no attention except in cases of damage when the door is forced open too far. In these cases, the hinge should be replaced.



1. Hinge spring—left (1 used in each hinge of right front and rear doors, sedans)
2. Hinge spring—right (1 used in each hinge of left front and rear doors, sedans)

Figure 34—Door Hinge Springs.

Hinge springs can be replaced *only by removing the hinge pin. Therefore the hinge must be removed from the body pillar.*

It is not necessary to remove the hinge from the door, as the complete door with hinges can be removed from the body by removing the screws holding hinges to body pillars.

Broughams or Two-Door Models

The upper hinge has two springs.

Right Doors

1 — Right spring in top of upper hinge.
1 — Left spring in bottom of upper hinge.

Left Doors

1 — Left spring in top of upper hinge.
1 — Right spring in bottom of upper hinge.

The lower hinge has only one spring.

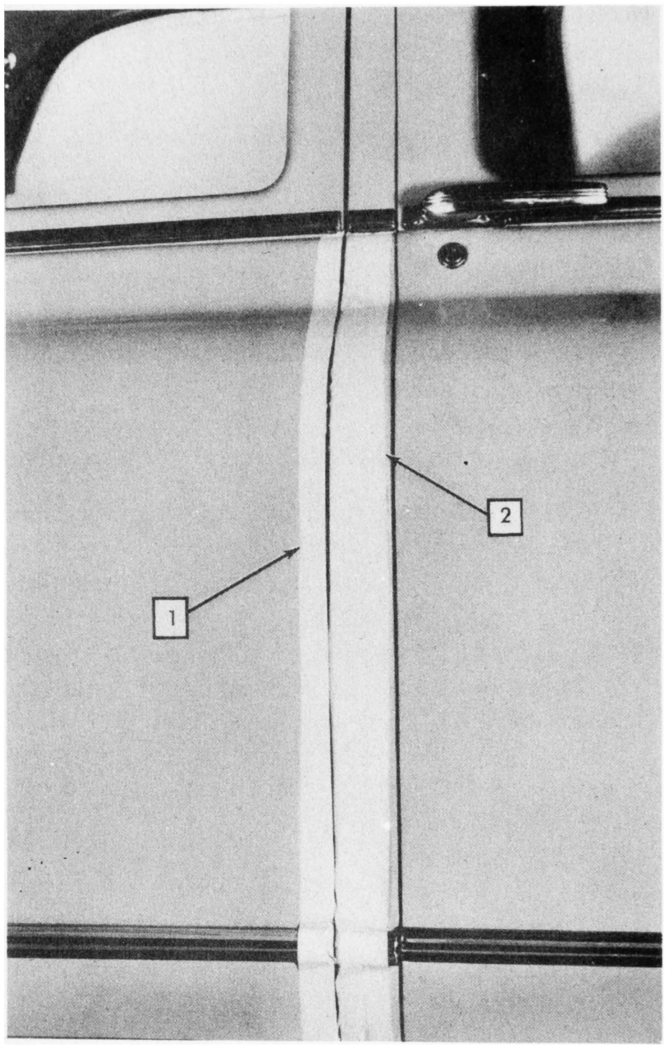
1 — Left spring in the lower hinge (right door).
1 — Right spring in lower hinge (left door).

35. DOOR HINGE SPRING INSTALLATION—REAR DOOR

1949 "600" and "Ambassador 6" Series

Removing Door from Body

1. Use 2" masking tape on door flange and body to prevent damage to paint in removing door from body, as shown in Figure 35.
2. With scratch awl, mark around both hinges on body pillar to assist in proper setting of door, and adjustment when it is re-installed as shown in Figure 35-A.



1. Tape flanges of door
2. Tape surface of body hinge pillar

Figure 35—Door and Body Hinge Pillar Taped for Door Removal.

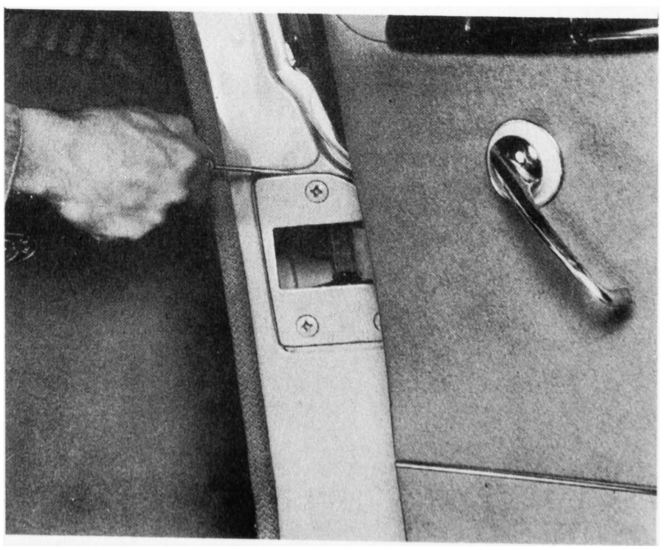
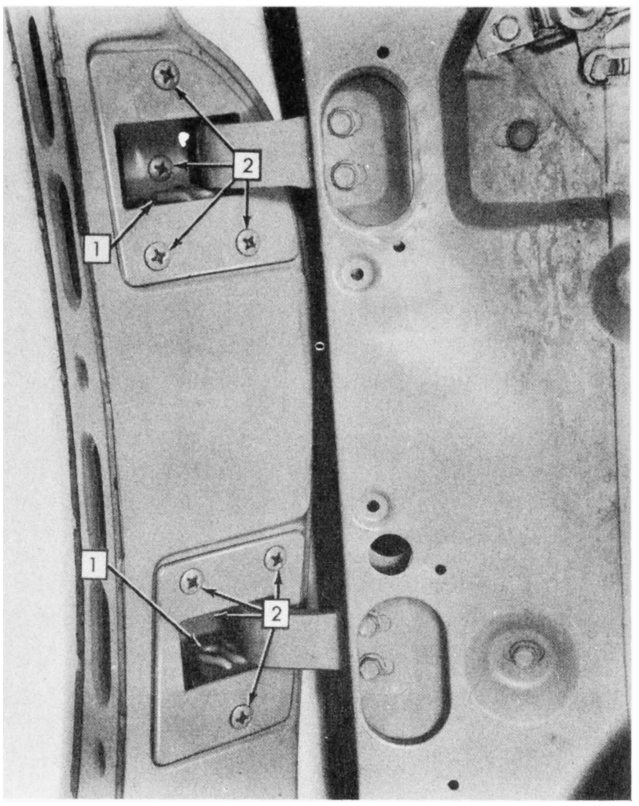


Figure 35-A—Marking Location of Hinges on Body Pillar with Scratch Awl.



1. Left spring
2. Four screws

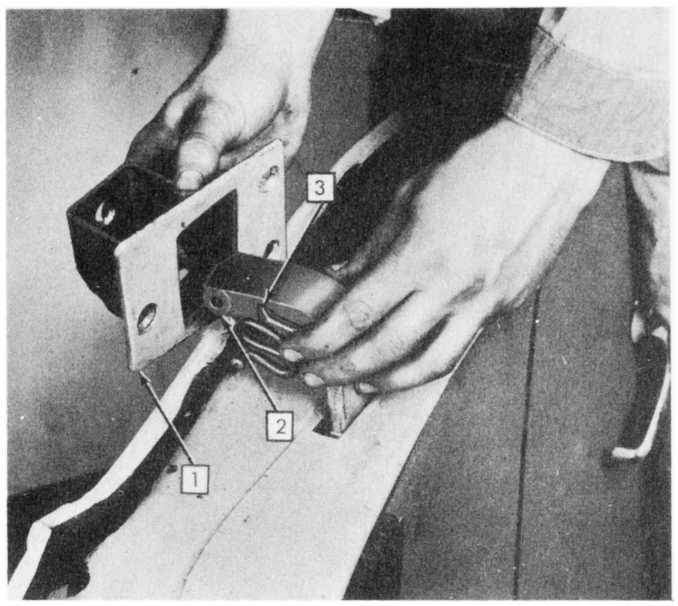
Figure 35-B—Door Hinges Screws and Springs—Right Rear Door.

3. Observe type of screw used in hinges—Phillips or Reed & Prince head (Fig. 35-B). Use proper screw driver. Remove all screws from both hinges to body pillar.
4. Lift door and carefully remove door hinges from body hinge pillar.
5. Place a suitable cover or pad on floor and against bench so that lock side of door may rest on pad and lean against bench without damaging door or paint.
6. Close hinge and carefully remove hinge pin. See CAUTION, Step No. 14.
7. Remove hinge base from shaft.

To Assemble Hinge and Spring See Subject 34 and Obtain the Correct Spring.

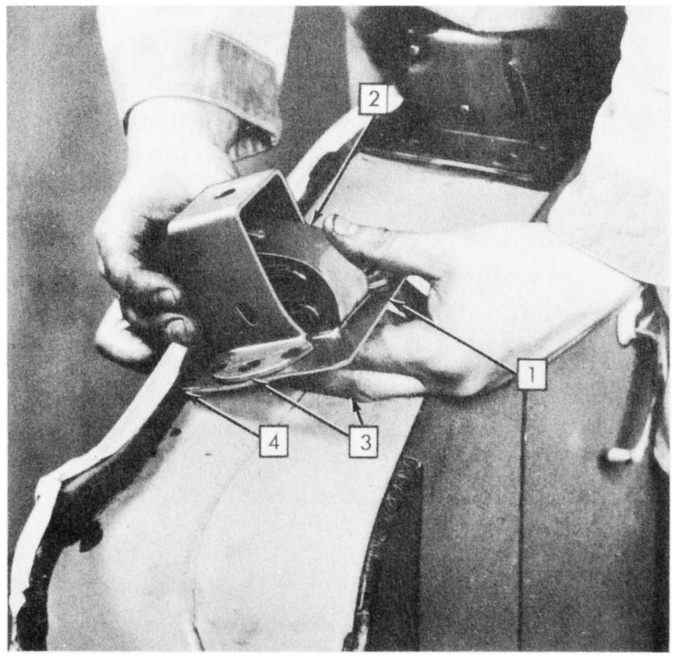
NOTE: *If there is a burr on end of spring prong, grind it off before installing.*

8. Insert spring prong in hinge shaft, and place hinge base over end of shaft as shown in Figure 35-C.
9. Hold top side of hinge base against shaft, tilting bottom side of hinge base up while placing spring prong against hinge base in line with slot which it is to engage. Wedge front edge of hinge face plate against door sealer rubber as shown in Figure 35-D.



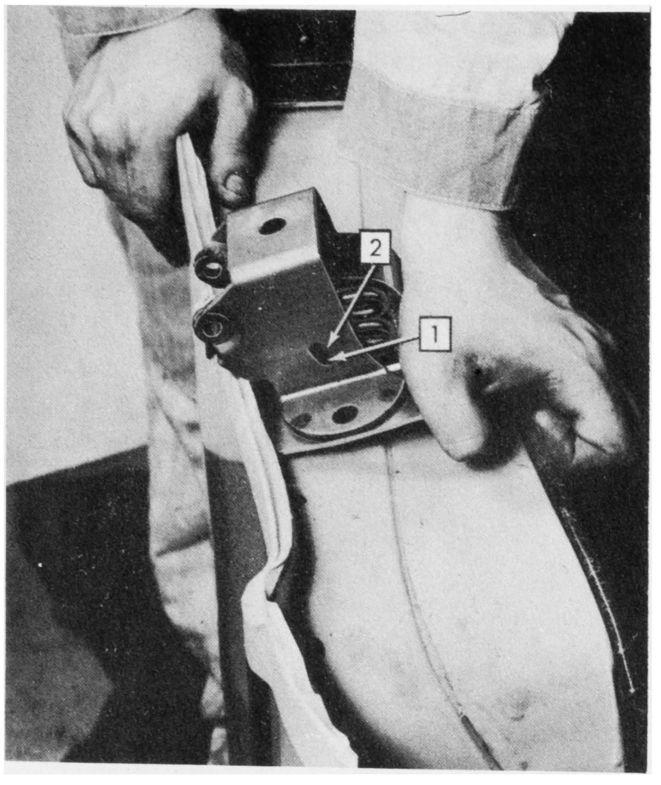
1. Hinge base
2. Hinge shaft
3. Hinge spring with prong in hinge shaft

Figure 35-C—Installing Hinge Base on Shaft with Spring in Proper Position.



1. Holding hinge base against hinge shaft
2. Hinge shaft
3. Tilting bottom side of hinge base up while placing spring prong in alignment with slot in hinge base
4. Hinge face plate wedged against door sealer rubber

Figure 35-D—Aligning Hinge Base on Shaft so Spring Prong will Enter Slot in Hinge Base.



1. Spring prong
2. Slot in hinge base

Figure 35-E—Closing Hinge so Spring Prong will Engage Slot in Hinge Base.

10. Following alignment (Operation 9), close hinge, forcing spring prong into slot of hinge base as shown in Figure 35-E.
11. With hinge closed, apply Lubriplate to hinge pin and install in hinge. (See CAUTION)
12. Open hinges and install door to body.
13. Align door so hinges will conform with scratch awl marks on body pillar, and tighten screws.

CAUTION: *When removing or installing hinge pins place heavy hammer against hinge while driving pin in or out. This will eliminate moving the hinge adjustment to the door pillar and inner panel.*

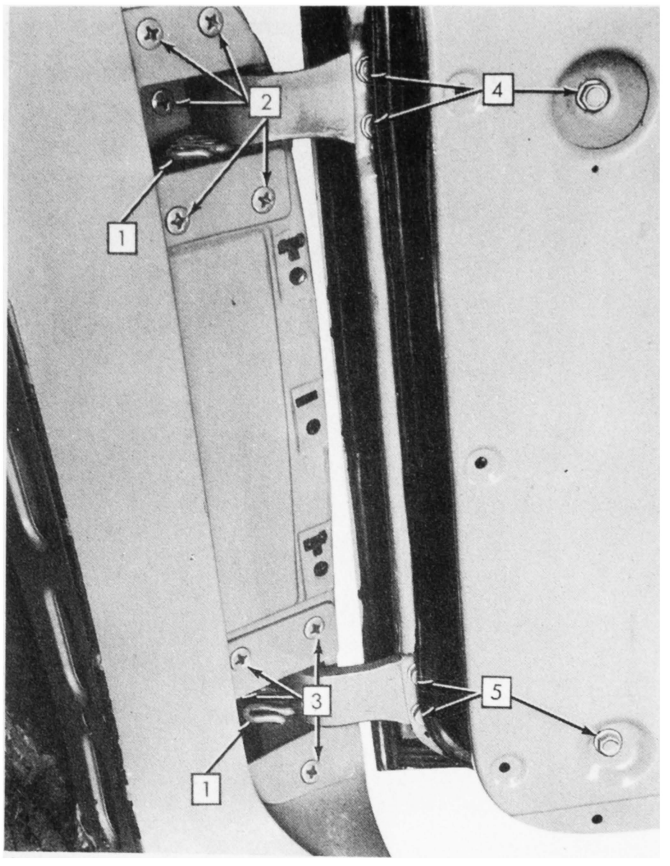
Lubrication

14. Apply Lubriplate to contact points of hinge spring against hinge base and shaft.

36. DOOR HINGE SPRING INSTALLATION—FRONT DOORS—SEDANS

1949 "600" and "Ambassador 6" Series

The installation of front door hinge springs is the same as for the rear doors. See Subject 35 and follow all operations.



1. Left spring (one used in each right door hinge)
2. Five screws upper hinge to body pillar
3. Four screws lower hinge to body pillar
4. Upper hinge screw to door
5. Lower hinge screw to door

Figure 36—Door Hinge Springs—Right Front Door, Sedans.

38. DOOR ALIGNMENT—ALL MODELS

1949 "600" and "Ambassador 6" Series

The proper alignment of the door is determined and maintained by the setting and adjustment of the door hinges. The contour of the door hinge pillar is the exact duplicate of the contour of the body hinge pillar. The correct setting of door hinges on both the door and the body hinge posts should provide a uniform clearance from top to bottom along the hinge pillar. With this established, the top, bottom and lock side of the door should also provide a uniform clearance in relation to the main roof rail, floor sill and lock pillar of the body (Figure 38).

39. DOOR HINGES

1949 "600" and "Ambassador 6" Series

All the door hinges are of the pin type. These hinge pins are spiral grooved to retain lubricant and eliminate excessive wear.

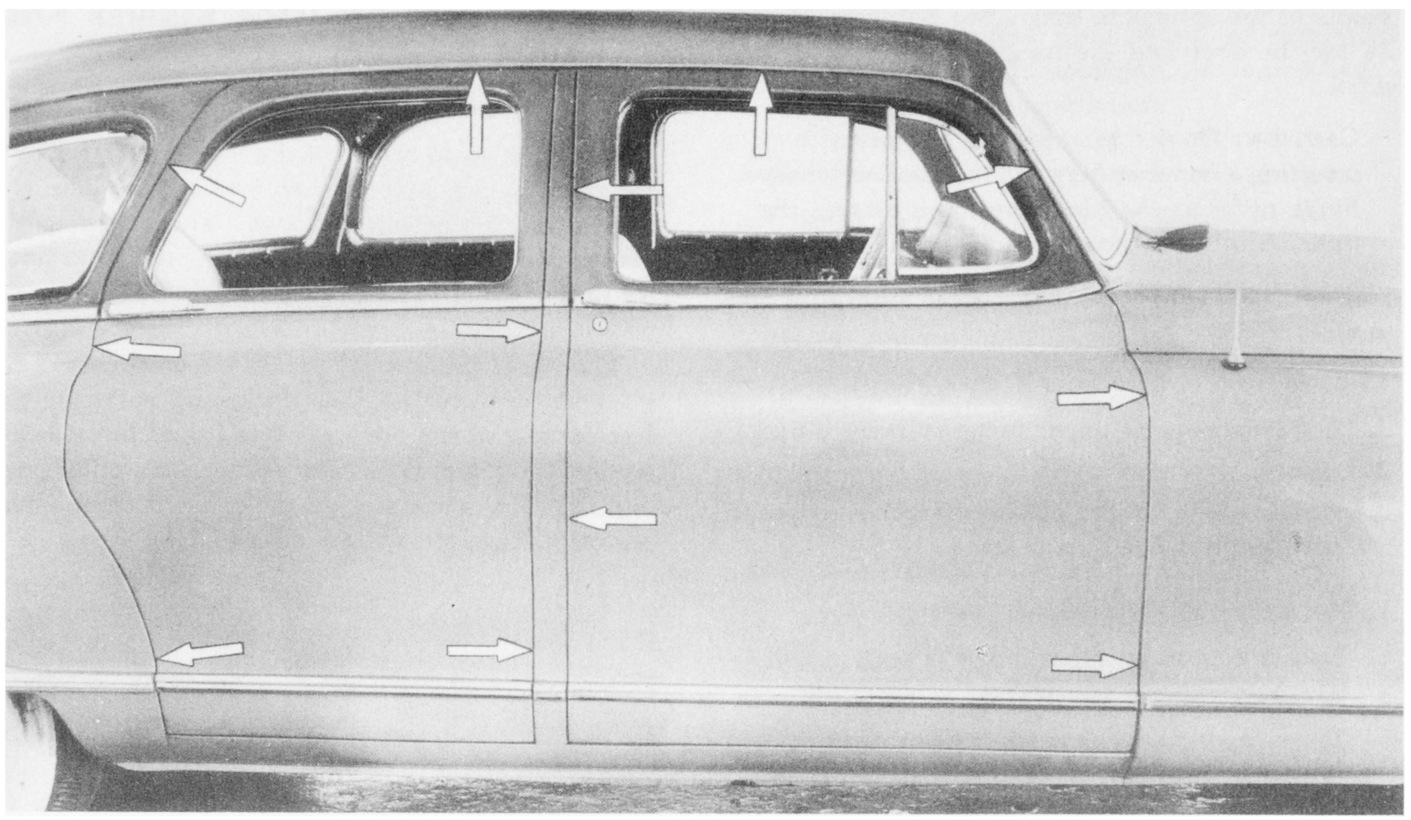


Figure 38—Door Alignment—Uniform Clearance Between Doors and Body.

The doors are also provided with "W" shaped springs which serve as door checks. These springs can be replaced in the hinges, eliminating the replacement of the complete hinge when only the spring is required. See Subjects 34, 35 and 36.

All hinges are adjustable to both the body and the door. The body hinge posts have tapped movable plates that are encased in the pillar. This permits movement of the hinge, up or down and in or out (Figs. 36 and 39).

The door pillar, inner panel and reinforcement have elongated holes, for adjustment of the door on the hinges. The door can be moved forward or back on the hinges to provide uniform clearance between the body hinge pillar and lock pillar.

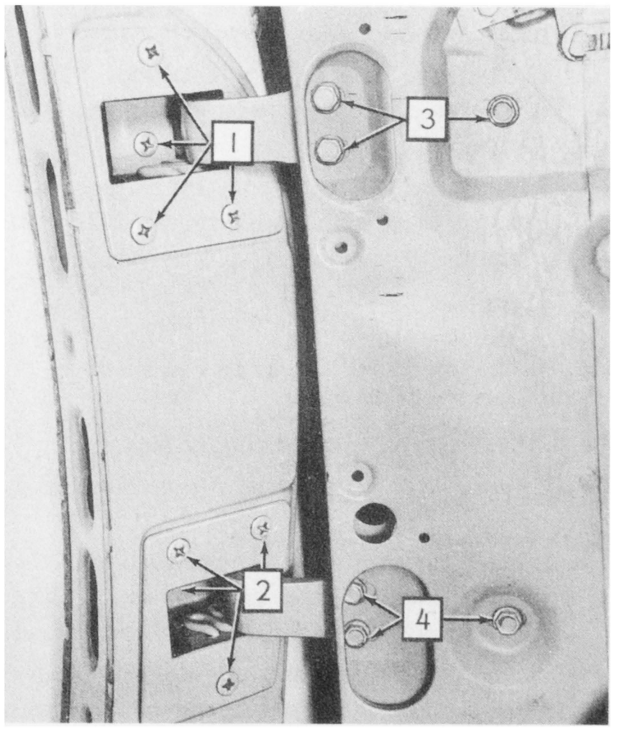
Maintenance

Keep all hinge screws tight on the door and body. Two types of screws are used in door hinges, either Phillips or Reed & Prince type.

CAUTION: *Use the proper screw driver to eliminate damage to the screw heads and to insure proper tightening.*

Lubrication

Apply Lubriplate to the hinge pins and the contact



1. Upper hinge screws to body
2. Lower hinge screws to body
3. Upper hinge screws to door
4. Lower hinge screws to door

Figure 39—Rear Door Hinges Adjustable to Door and Body.

points of the springs to hinge. See Subjects 35 and 36 for the door and the hinge pin removal procedure.

CAUTION: *Do not bend hinges. The practice of inserting a hammer between the door and body hinge pillar at the hinge and then closing the door should be discontinued.*

Adjustments

To Raise Front or Rear Door at Body Hinge Pillar:

1. Loosen screws at upper hinge to body pillar.
2. Loosen screws at lower hinge to body pillar.
3. Raise door to desired position. Tighten screws in both hinges. (See note below.)

To Move Front or Rear Door in Toward Body:

1. Loosen screws at upper hinge to body pillar.
2. Loosen screws at lower hinge to body pillar.
3. Move door in to desired position and tighten screws in both hinges. (See note below.)

To Move Front Door Closer to Center Body Pillar or Front Body Pillar:

1. Loosen front door trim panel along door hinge pillar and bottom of door.
2. Loosen screws at top hinge to door. Move top of door toward center body pillar or hinge pillar as desired, and tighten screws.
3. Loosen screws at bottom hinge to door. Move bottom of door toward center body pillar or hinge pillar as desired, and tighten screws. (See Note.)

To Move Rear Door Closer to Center Body Pillar or Rear Quarter Body Pillar:

1. Remove remote control handle.
2. Loosen door trim panel along door hinge post and bottom of door.
3. Loosen screws at top hinge to door. Move top of door toward center body pillar or rear quarter body pillar as desired, and tighten screws.
4. Loosen screws at bottom hinge to door. Move bottom of door toward center body pillar or rear quarter body pillar as desired, and tighten screws. (See Note.)

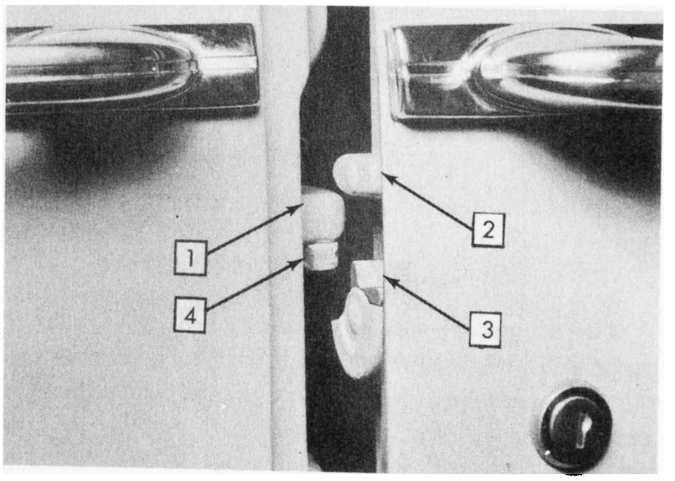
NOTE: *After making any adjustments on hinges, refer to* Subject 40, "COMBINATION LOCK STRIKER AND MALE DOVETAIL."

40. COMBINATION LOCK STRIKER AND MALE DOVETAIL

1949 "600" and "Ambassador 6" Series

The striker plate serves a dual purpose. It keeps the door in the latched position and prevents the door from moving up and down. This striker plate also contains a pivoted safety catch which prevents the door from opening when it has not been securely closed.

The upper block and rotor wheel on the door are integral parts of the door lock, and serve as the female part of the dovetail. The upper block bears against the top of the striker plate on the pillar post, and the rotor wheel bears against the bottom of the striker plate as shown in Figure 40.



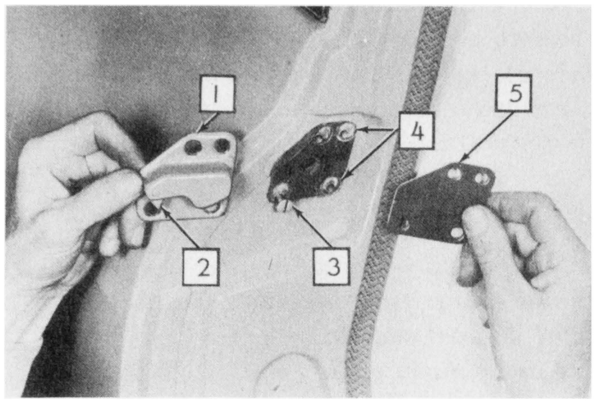
1. Striker plate and dovetail
2. Female dovetail
3. Rotor wheel
4. Safety catch

Figure 40—Door Lock Striker and Dovetail.

The rotor wheel keeps the door in the closed position, as it can turn in one direction only due to spring tension on the individual cams. This wedges the cams against the rotor wheel. When the door handles are moved to open the door, the cams in the latch release the rotor wheel so it will turn in either direction. The cams in the latch, being under individual spring tension, automatically take up clearance created by compression of the door sealer rubber. See Figures 22 and 23, Pages 20 and 22. Therefore, adjustment of the striker plate is not required as frequently as in other types of door locks.

Adjustment of Striker Plate

1. The body pillars are provided with a tapped movable lock plate that is encased in the pillar,



1. Striker plate and dovetail assembly
2. Safety catch
3. Striker plate screw
4. Striker—adjustable lock plate
5. Striker shim

Figure 40-A—Adjustment of Striker Plate.

which permits movement of the striker plate up or down, in or out (Fig. 40-A).

2. The striker plate should be adjusted so that the top will be about $\frac{1}{32}$" below the bottom of the dovetail block. At this setting the rotor wheel should strike the safety catch in the center when the door is being closed. The lock striker must be set low enough so that the movable catch will contact the lock rotor, causing it to revolve when the door is being opened. THIS WILL ELIMINATE THE ROTOR FROM BECOMING STUCK ON DEAD CENTER, AND ALLOW THE LOCK TO CATCH WHEN THE DOOR IS CLOSED.
3. The striker plate should be moved toward the inside of the body as far as possible and still permit latching the door without excessive pressure or slamming. This will compress the door sealer rubber sufficiently to eliminate any door noise or movement in the door and also to create sufficient sealing to prevent drafts or wind noise. In cases where the striker plate has been moved in as far as possible and the door sealer rubber is not tight against the body, it is then necessary to remove the striker plate and ream the inner edge of the holes in the body pillar.
4. The lock striker and dovetail should also extend far enough from the body pillar to permit at least 50% bearing surface for the female dovetail of the lock. To obtain this setting, shim back of the lock striker. If necessary, longer screws may be used.

CAUTION: *Never hit or try to bend either of these units to bring them into proper alignment. If either the rotor wheel or dovetail block of the lock is damaged, the entire lock assembly should be replaced.*

Lubrication

Lubricate both sides of the striker and rotor with a thin film of Lubriplate. Refer to Subject 22, Figure 22-C, DOOR LOCK LUBRICATION, Page 22.

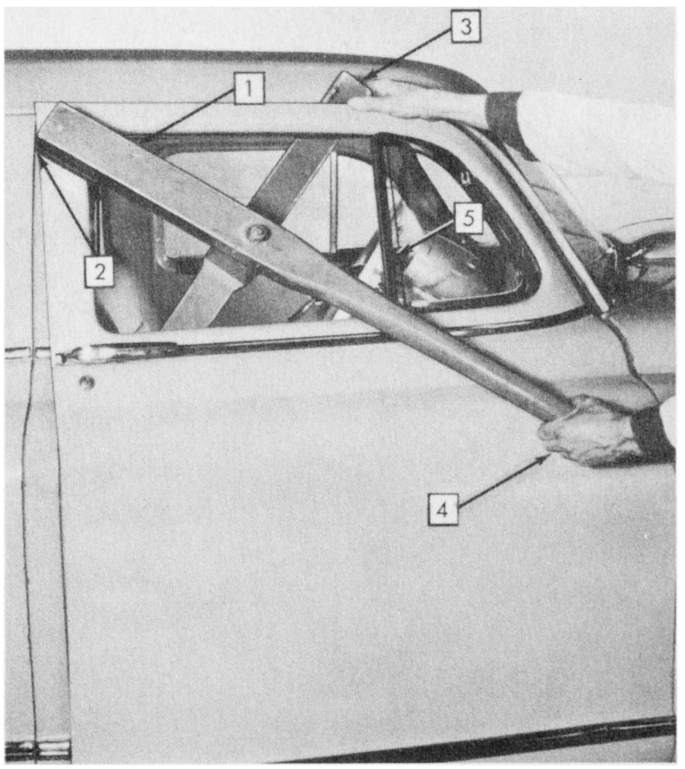
NOTE: *Always lower door glass when adjusting lock strikers. This will prevent the body from being air bound.*

In winter be sure door sealer rubbers are soft before adjusting lock striker. See Subject 42.

41. BENDING DOORS

1949 "600" and "Ambassador 6" Series

In cases where a door has been adjusted at the hinges as explained in Subjects 38 and 39, and still is not flush with the body, it can be aligned by bending the door with a door bending tool as shown in Figures 41, 41-A, 41-B and 41-C.



1. Tool placed on door pillar and not on flange
2. Rubber pad for protection of paint
3. Holding tool in proper position
4. Applying pressure on door by pulling handle out
5. Ventilator glass open ½ inch

Figure 41—Bending Top of Front Door in at Lock Side.

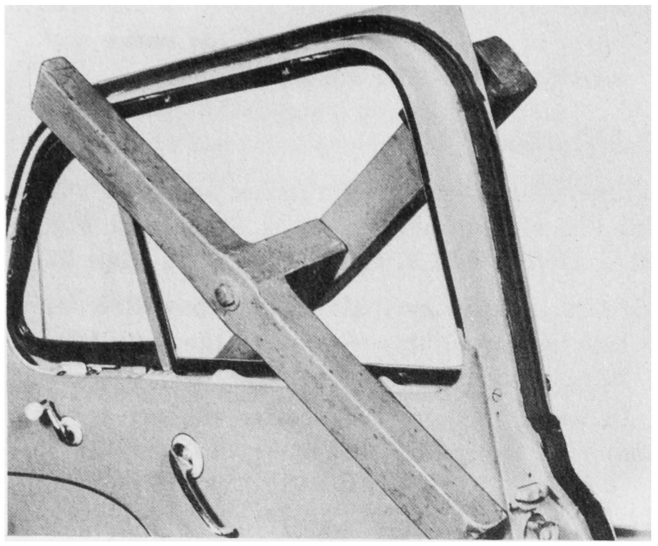
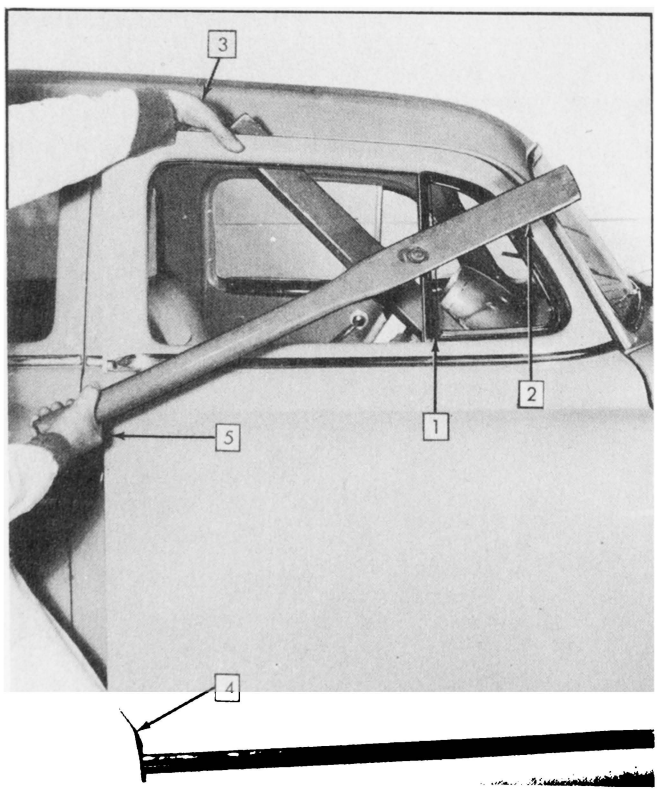


Figure 41-A—Position of Tool on Inside of Front Door.

NOTE: *Always remove the finish molding from the doors and open the ventilator glass about ½ inch, when using the door bending tool.*



1. Ventilator glass open ½ inch
2. Rubber block on door hinge post (not flange)
3. Holding tool in proper position
4. Supporting bottom of door with knee
5. Applying pressure to door by pulling handle out

Figure 41-B—Bending Top of Front Door in at Hinge Side.

CAUTION: *Care should be exercised in applying the tool to the door. See that the contacting surface of the tool is on the door pillar and does not extend too far to the outer edge, as the latter will cause the door flange to be bent, instead of the door frame.*

Pressure should be applied to the tool moderately, to avoid bending the door excessively. It is better to bend the door a little, then remove the tool and close the door for inspection. Repeat this bending operation until the door is properly aligned.



Figure 41-C—Bending Top of Rear Door in at Hinge Side.

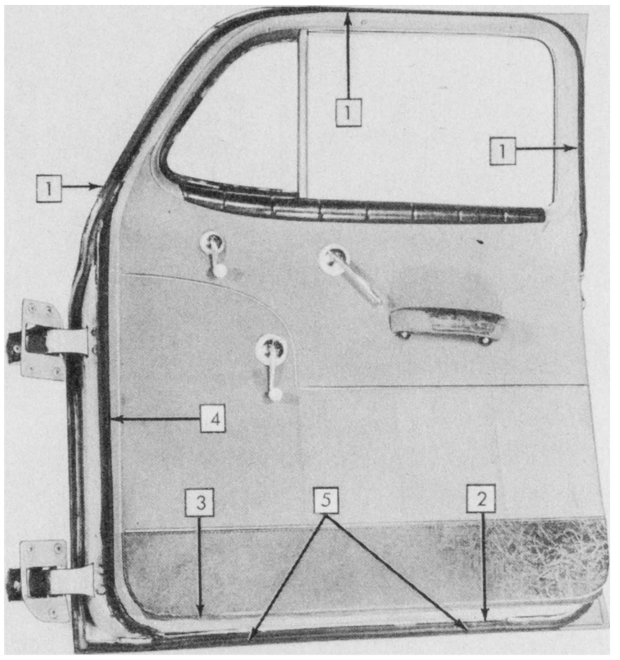
This type of door bending tool is simple in design and *very easy to make.* It has a rubber block on the exterior contacting surface to prevent damage to the paint when applied.

In cases where the door has to be bent out, the tool is applied to the inside of the door. To bend it out, the contacting surfaces of the tool should be carefully padded to avoid damage to the paint.

42. DOOR SEALER RUBBERS

1949 "600" and "Ambassador 6" Series

All of the door sealer rubbers, except the bottom inner sealer rubber on the trim panel, are of a sponge rubber with a skin over the complete exterior (Figs. 42 and 42-A). Their purpose is to seal around the door at all points of contact with the body. These sealer rubbers are cemented to the door flanges with rubber cement.



1. Sealer rubber—top and sides
2. Sealer rubber—bottom, outer (on door)
3. Sealer rubber—bottom, inner (on trim panel)
4. Sealer rubber—hinge pillar, inner
5. Drain holes in bottom of door

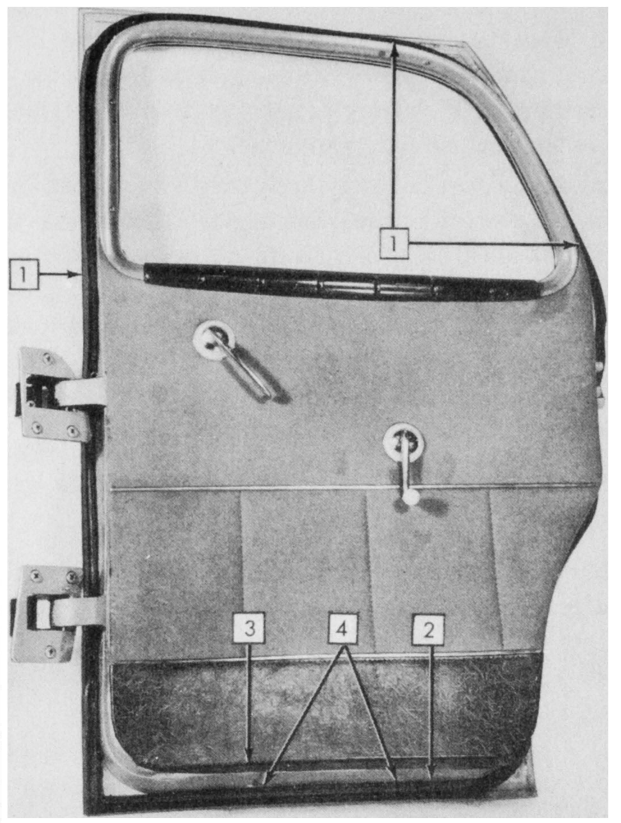
Figure 42—Door Sealer Rubbers, Right Front Door.

Should it become necessary to replace any of the door sealer rubbers, follow the replacement installation procedure below.

Replacement Installation Procedure

Replacement door sealer rubbers are coated with graphite or powder to prevent stickiness while being carried in parts stock.

1. Remove all graphite or powder with a cloth dampened in gasoline.
2. Remove all old rubber from door and clean thoroughly. Then apply a thin coat of Nash black rubber cement to the door flange.



1. Sealer rubber—top and sides
2. Sealer rubber—bottom, outer (on door)
3. Sealer rubber—bottom, inner (on trim panel)
4. Drain holes in bottom of door

Figure 42-A—Door Sealer Rubbers—Right Rear Door.

3. Apply thin coat of black rubber cement to sealer rubber on both sides which contact door flange and body pillar. Allow cement to dry to "tacky" condition before installing rubber seal onto door flange.

   CAUTION: *Insert sealer rubber between hinge and door flange until edge of rubber is even with bottom of door.*

   Do not stretch rubber.

   Do not allow any slack in rubber

   Hold sealer rubber in proper position before any contact is made with door; otherwise it will be difficult to remove rubber for readjustment.

4. Install door outer bottom sealer rubber in same manner as top and sides.

   NOTE: *When installing the outer bottom sealer rubber, see that the cutouts in the rubber line up with the drain holes in the bottom of the doors.*

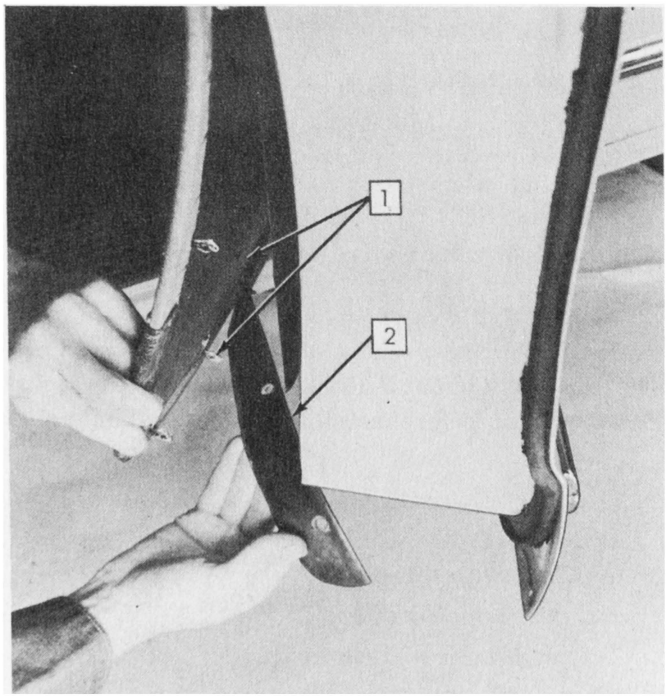
Maintenance of Sealer Rubbers

Cold weather has a tendency to cause the door sealer rubber to harden, causing it to lose some of its resiliency. This may cause the door to be loose in the opening, resulting in noise.

In service, use a cloth dampened in gasoline and clean all the dirt from the sealer rubbers on the doors. Clean all the dirt from the body pillars and from all the points where the rubber contacts the body. Now apply a good rubber softener solution to the sealing rubber. In some cases, when rubber is dry, a second application of rubber softener may be necessary to obtain desired results.

CAUTION: *Do not use graphite, brake fluid or any wax on sealer rubbers.*

The inner bottom door sealer rubber (on the trim panel) serves as an additional seal between the bottom of the door and the top of the door sill mat (Fig. 42-B). It is held in place by the door trim panel bottom clips.



1. Door trim panel and clip
2. Door sealer rubber inner

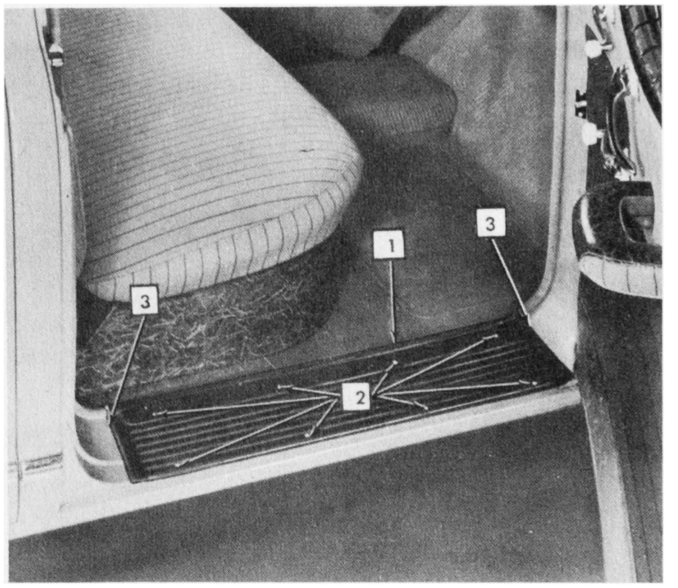
Figure 42-B—Removing or Installing Door Sealer Rubber Bottom Inner (on Trim Panel).

This seal rubber may be adjusted by elongating the holes in the rubber and moving it up or down as desired, before the clips are pressed firmly into the door inner metal panel.

43. DOOR SILL MAT

1949 "600" and "Ambassador 6" Series

The door sill mats are molded rubber with steel reinforcing and corrugations (Fig. 43).



1. Door sill mat
2. Door sill mat screws
3. Drive nails

Figure 43—Right Front Door Sill Mat and Screws, Sedan.

These door sill mats are fastened to the body sill by treated sheet metal screws. There is also one tack at each inside corner, set into the floor carpet tacking strip. These mats serve as a step plate and seal for the door inner bottom sealer rubber (Fig. 42-B).

44. BODY MOLDINGS, FASTENING CLIPS AND BOLTS

1949 "600" and "Ambassador 6" Series

Moldings are fastened to the body with various types of retainers, which are shown in the following figures.

The rear deck cover molding retainers (Fig. 44) are riveted to the flange of the cover to provide uniform appearance and seating of the cover against the sealer rubber.

The rear quarter belt molding clips are screwed to the body, and have rubber sealer washers covering the screws on the inside. This rubber sealer washer prevents water leakage and possible damage

to trim panels in the trunk compartment (Fig. 44-A).

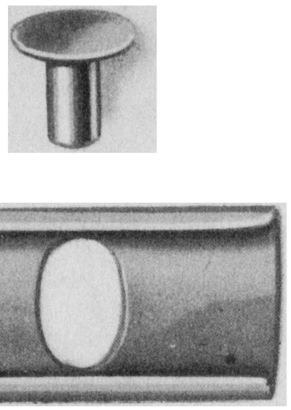


Figure 44—Rear Deck Cover Molding Retainer and Rivet.

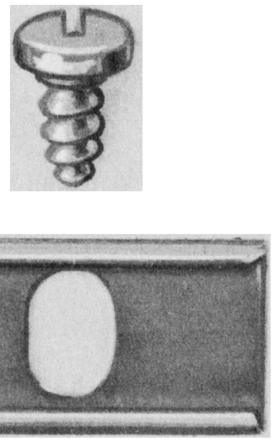
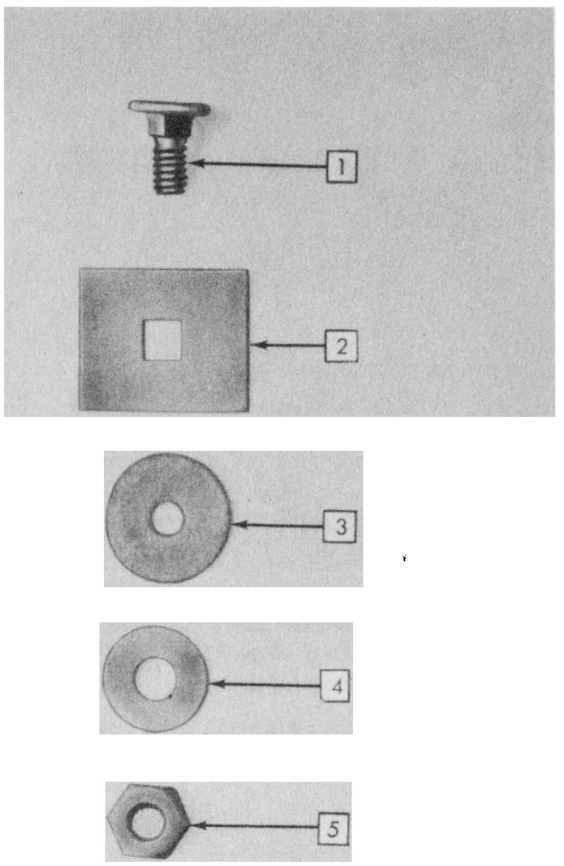


Figure 44-A—Rear Quarter Belt Molding Retainer and Screw.

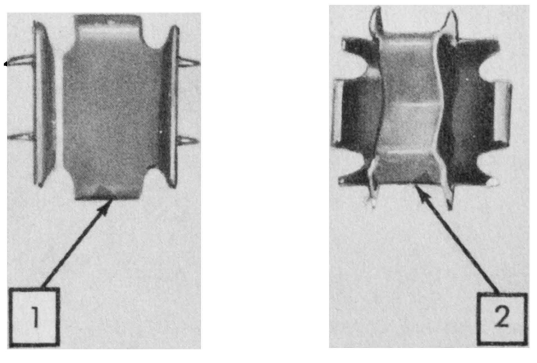
The rear deck lower center panel molding is bolted, with rubber sealer washers on the inside of the trunk compartment to eliminate any possible water leaks. This also insures easy removal and installation in service (Fig. 44-B).

Drain holes are provided in the bottom of the door to drain off any water that may enter around the glass. Therefore, the molding clips are not a seal type.



1. Bolt
2. Plate
3. Rubber sealer washer
4. Flat washer
5. Nut

Figure 44-B—Rear Deck Center Panel Lower Molding Retainer. (Bolt and Plate Inserted into Molding Flanges.)



1. Top view
2. Bottom view

Figure 44-C—Doors and Center Body Pillar Belt Molding Clips.

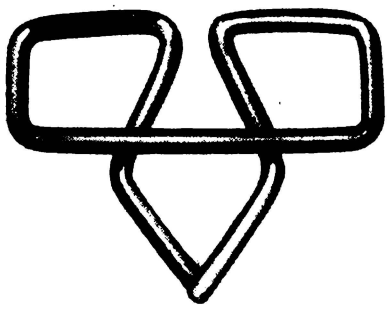
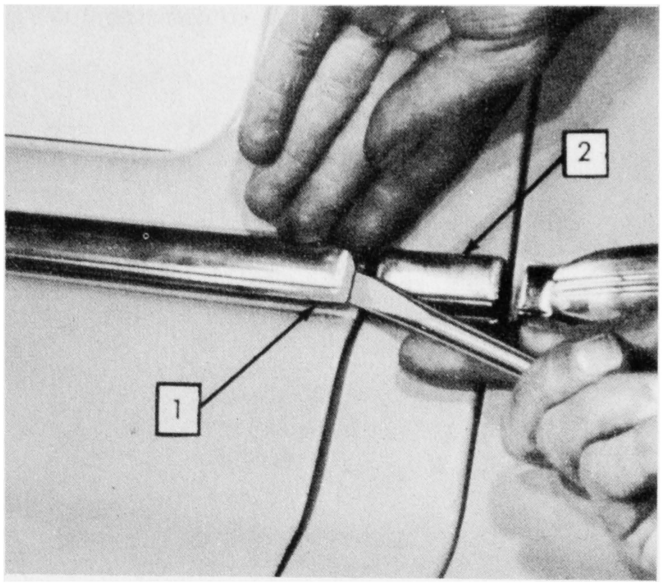


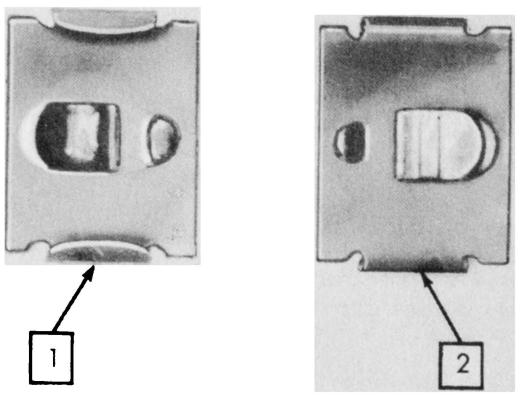
Figure 44-D—Center Body Pillar and Rear Fender Lower Molding Clip. (Inserted into Molding Flanges.)

Used at front end and at back curve of fender



1. Rear door belt molding
2. Center body pillar belt molding

Figure 44-F—Pry the End of the Molding up off the Molding Clip.

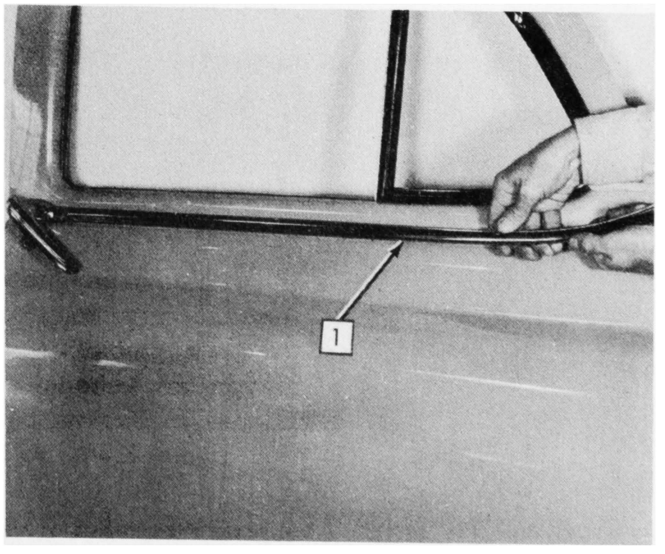


1. Top view
2. Bottom view

Figure 44-E—Rear Fender Side and Door Lower Molding Clip.

Removing Belt and Lower Moldings

1. Insert small screw driver under end of molding and pry bottom of molding off clip (Fig. 44-F).
2. Pull loosened end of molding away from body, and push molding down to unhook it from bottom of next clip. Twist bottom of molding away from body and then raise it to unhook top of molding from clip (Fig. 44-G).



1. Belt molding

Figure 44-G—Removing Belt Molding.

Installation Procedure

3. Space molding on panel. Then hook bottom end of molding on bottom of clip. Now, with heel of hand, hit molding with glancing blow. This will push top of molding over top of clip. Continue this operation at each clip.

NOTE: *This removal and installation procedure will apply to all moldings except rear fender lower molding and rear deck lower panel molding (below rear deck opening).*

Removing Rear Fender Lower Molding

4. With rear door open pry end of molding away from body with small screwdriver. If end of clip is rusted, use pliers to close end of clip on inside of fender (Figs. 44-D and 44-E).
5. Remove this molding in the same manner as the belt molding (outlined on page 44, paragraph 2).
6. The same type of clips are used on the curve of the fender. Use pliers to close ends of each clip on inside of fender, and carefully pry molding and clip out of each hole in fender. Continue this procedure until molding is removed.

To Install Rear Fender Lower Molding

7. Adjust wire clips in back of molding and line them up with holes in curve of fender. Then push molding and force clips into holes in fender.
8. Now hook bottom of molding on bottom of clip on the side of fender. Then push top of molding over top of clip. Continue this operation at each clip until end clip is reached. Then adjust molding to line up with each hole in fender. Now push molding in, forcing each clip into holes in fender.

Removing Rear Deck Lower Molding

9. This molding is bolted to rear deck lower panel. Raise rear deck cover and pull insulation out of way. Now remove nuts, flat washers, rubber sealer and washers. Then push ends of bolts and molding away from body.

To Install Rear Deck Lower Panel Molding

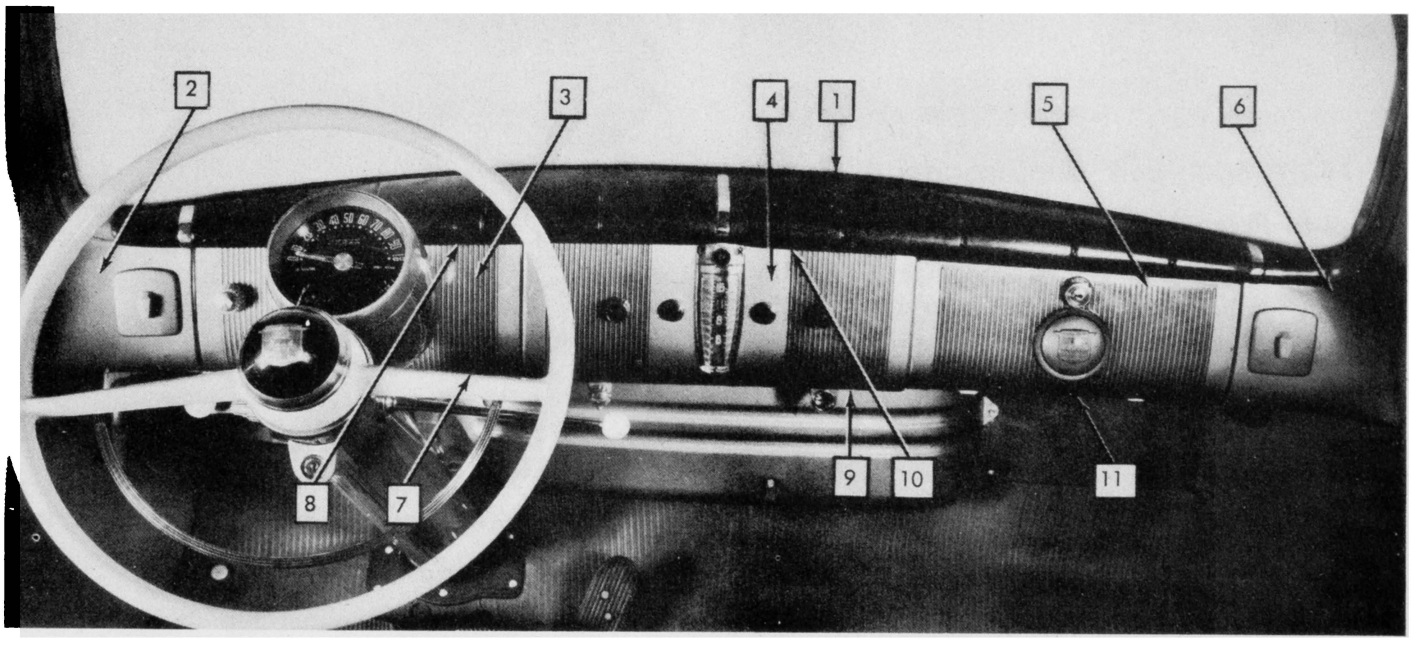
10. Adjust bolts and retaining plates in molding so that they line up with holes in body, and insert them through these holes.
11. Install rubber sealer washer, flat washers and nuts on bolts from inside of trunk compartment.

45. INSTRUMENT PANEL OVERLAYS

1949 "600" and "Ambassador 6" Series

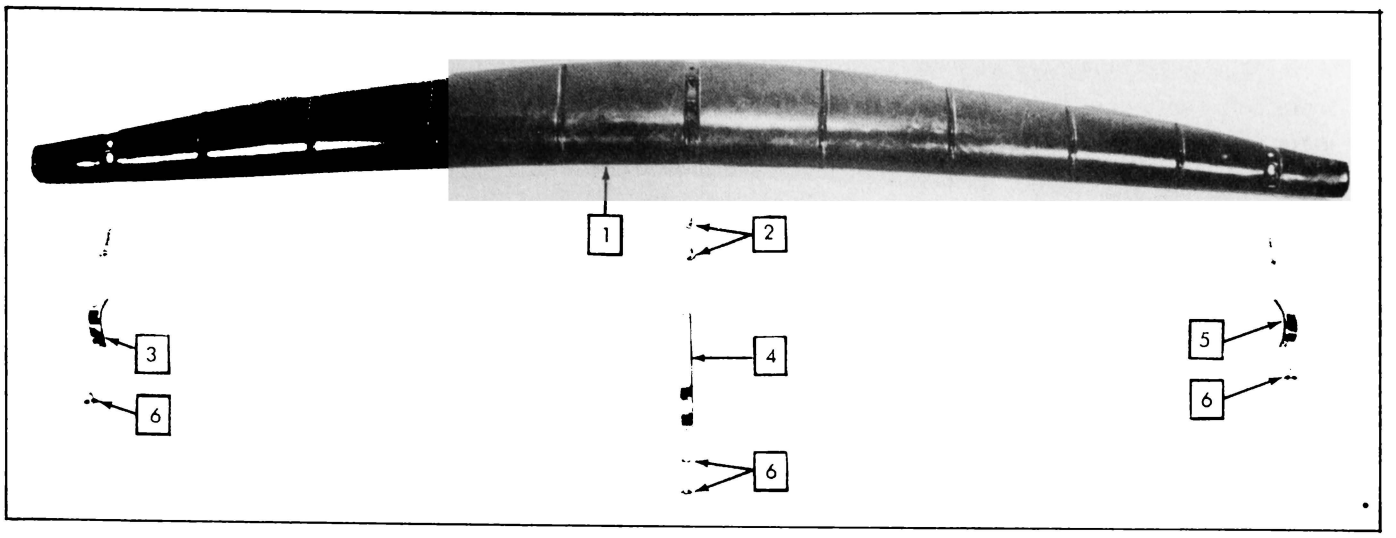
The instrument panel top overlay is a steel stamping having a grained finish.

The right and left end overlays, which retain the ash receivers, are also steel stamps with the ash receiver retainers welded to the inside flanges of the overlays.



1. Top overlay (Subject 46)
2. Left end overlay (Subject 49)
3. Left side overlay (Subject 47)
4. Center overlay (Subject 48)
5. Glove box door overlay (Subject 53)
6. Right end overlay (Subject 49)
7. Left side overlay bottom clip
8. Left side overlay top clip
9. Center overlay bottom clip
10. Center overlay top clip
11. Glove box door overlay bottom clip

Figure 45—Instrument Panel Overlays and Fastening Clips.



1. Top overlay
2. Center screws
3. Left end trim molding
4. Center trim molding
5. Right end trim molding
6. Trim molding clips

Figure 46—Instrument Panel Top Overlay Assembly.

The left side, center and the glove box door overlays are clear plastic with a special paint applied to the inside surfaces.

Extra precautions should be taken when handling overlays so as not to scratch or damage the outside or inside painted surface.

The removal procedure of each of these overlays differs; therefore refer to their subject number as shown in Figure 45.

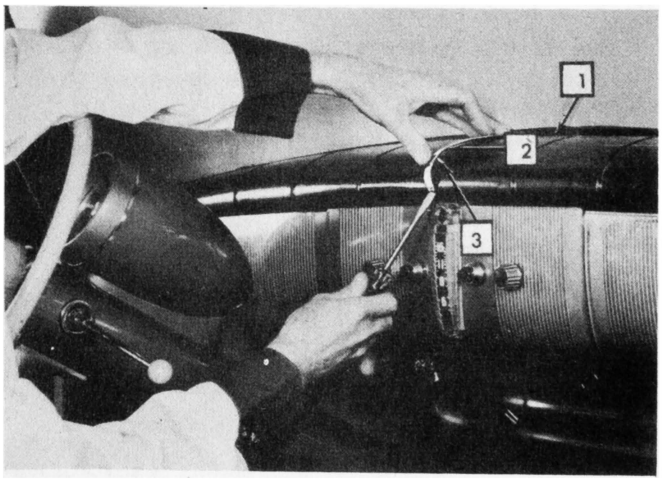
46. INSTRUMENT PANEL TOP OVERLAY

1949 "600" and "Ambassador 6" Series

Removal Procedure

1. Remove left end, center and right end trim moldings by inserting small screw driver under front end of trim molding and prying up molding, releasing clip from overlay (Figs. 46 and 46-A).
2. When trim moldings are removed, remove exposed screws that fasten overlay to instrument panel.
3. Lift overlay from instrument panel.

CAUTION: *Insulation pads are placed between the top overlay and the instrument panel. If they are loosened when the overlay is removed, they should be replaced in the same location when the overlay is installed. Care should also be exercised not to damage the finish on the overlay.*



1. Instrument panel top overlay
2. Center trim molding
3. Trim molding clip

Figure 46-A—Removing Instrument Panel Top Overlay Center Trim Molding.

47. LEFT SIDE INSTRUMENT PANEL OVERLAY

1949 "600" and "Ambassador 6" Series

Removal Procedure

1. Remove instrument panel top overlay (Subject 46).
2. Remove bottom clips (item 7, Fig. 45).
3. In some cases it may be necessary to loosen steering column support bracket (item 12, Fig. 45).
4. Remove top clips (item 8, Fig. 45).

5. Remove Weather-Eye and defroster control knobs.
6. Remove overlay from instrument panel.

To Install, Reverse Removal Procedure

48. INSTRUMENT PANEL CENTER OVERLAY (RADIO)

1949 "600" and "Ambassador 6" Series

Removal Procedure

1. Remove radio control knobs (Fig. 45).
2. Remove nuts holding radio control shafts to overlay.
3. Remove windshield wiper control bracket.
4. Remove cigar lighter bracket (on certain models).
5. Remove overlay bottom clip (on certain models).
6. Pull bottom of overlay away from instrument panel until radio shafts are out of overlay. Then carefully pull overlay down, releasing it from top clip under top overlay.

To Install, Reverse Removal Procedure

49. INSTRUMENT PANEL END OVERLAYS

1949 "600" and "Ambassador 6" Series

Instrument Panel Left End Overlay

Removal Procedure (See Fig. 45)

1. Remove instrument panel top overlay (Subject 46).
2. Remove instrument panel left side overlay. See Subject 47, Page 46.
3. Remove rear view mirror (Fig. 45).
4. Remove defroster outlet caps (Fig. 45).
5. Remove windshield finish molding.
6. Remove ash receiver.
7. Remove screws holding overlay to top, side and bottom of instrument panel and to front body pillar.

To Replace, Reverse Removal Procedure

Instrument Panel Right End Overlay

Removal Procedure

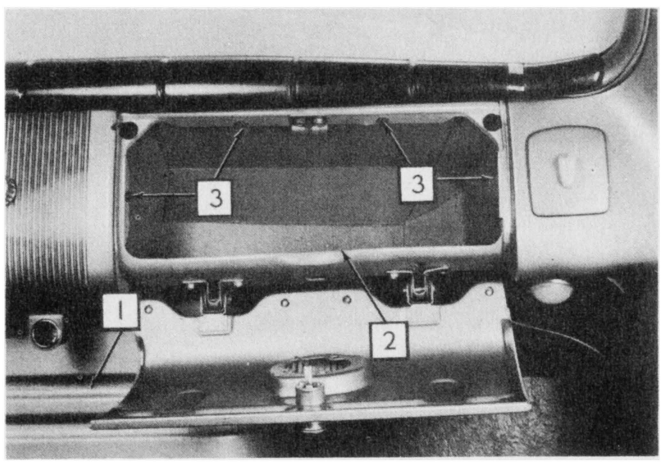
1. Remove instrument panel top overlay. See Subject 46, Page 46.
2. Remove rear view mirror.
3. Remove defroster outlet caps.
4. Remove windshield finish molding.
5. Remove ash receiver.
6. Remove screw, right side glove box opening (Fig. 50), also at top and bottom of instrument panel and front body pillar.

50. GLOVE BOX

1949 "600" and "Ambassador 6" Series

Removal Procedure

1. Remove Weather-Eye heat deflector.
2. Remove screws holding glove box to opening in instrument panel.
3. Push glove box forward from flange on instrument panel opening (Fig. 50).



1. Weather-Eye heater deflector
2. Glove box
3. Retainer screw

Figure 50—Glove Box and Retainer Screws.

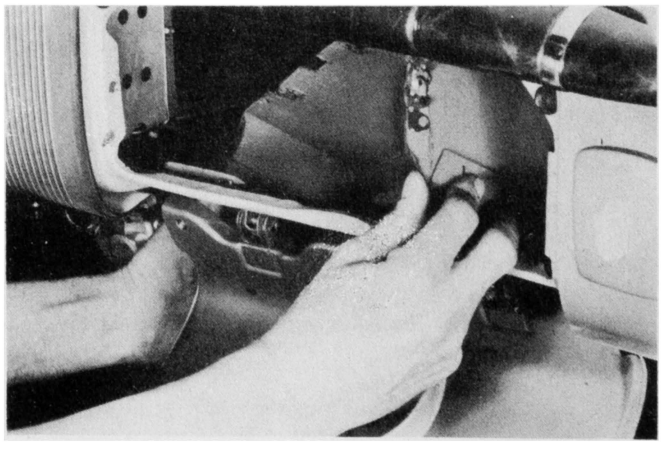


Figure 50-A—Removing Glove Box.

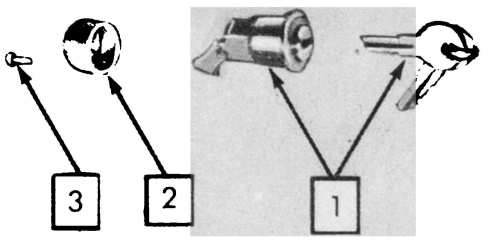
4. Tilt left side of box down to vertical position and lower complete box until it will just clear bottom of instrument panel. Then remove (Fig. 50-A).

To Install, Reverse Removal Procedure

51. GLOVE BOX LOCK

1949 "600" and "Ambassador 6" Series

The glove box lock is inserted through the glove box door from the outside. The lock retainer is set over the lock on the inside of the door. This lock retainer is held in place by a retainer screw, fastened to the lock housing (Fig. 51).

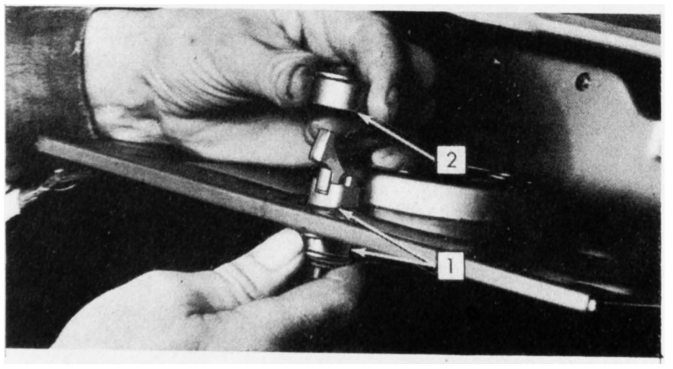


1. Lock and keys
2. Lock retainer
3. Retainer to lock screw

Figure 51—Glove Box Lock Assembly.

Removal Procedure

1. With door open, remove retainer screw.
2. Lift retainer from door and lock.
3. Remove lock from door (Fig. 51-A).

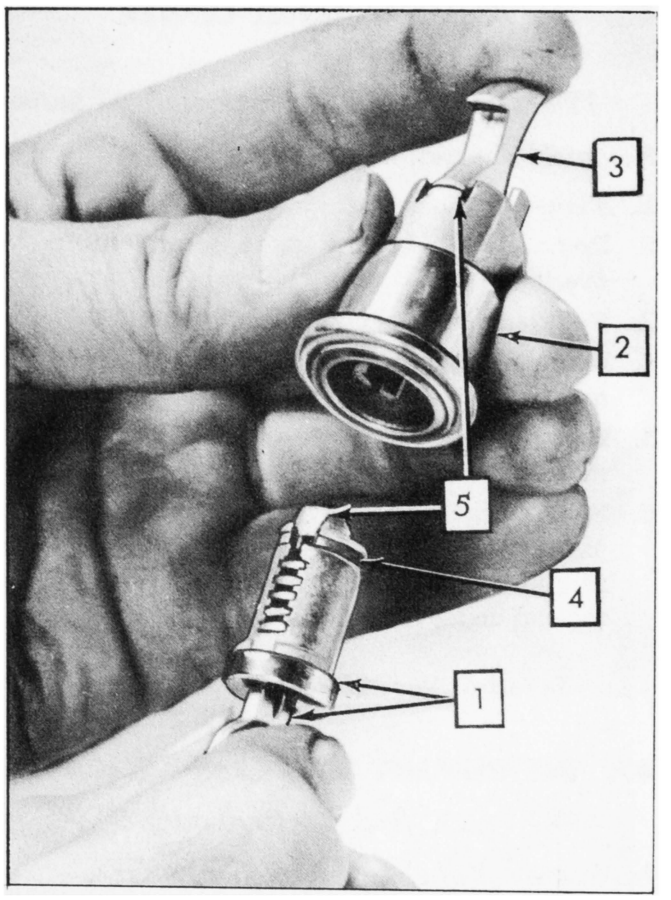


1. Lock
2. Lock retainer

Figure 51-A—Removing Glove Box Lock from Glove Box Door.

Removing Cylinder Lock from Lock Housing

For maintenance or lubrication, the cylinder lock may be removed from the lock housing *without removing the lock housing from the glove box door.* (Fig. 51-B).



1. Cylinder lock and keys
2. Housing
3. Lock catch
4. Cutout and locking groove in cylinder
5. Alignment for installation

Figure 51-B—Removing Cylinder Lock from Lock Housing (Glove Box Door Lock).

Removal Procedure

1. Insert key in lock to close tumblers.
2. With forefinger, press down on lock catch, holding it down or in the unlocked position.
3. Turn key and cylinder to right as far as possible.
4. Remove key and key cylinder from lock housing.

To Install

5. Hold lock catch down, as shown in Figure 51-B.

6. Insert the key in the lock.
7. With cut-out and locking groove (item 4, Fig. 51-B) upward and in line with lock catch (item 3), insert cylinder in housing until face of cylinder is flush with face of housing.
8. Turn key to left as far as possible.
9. Release lock catch, locking the cylinder in the housing.

Lubrication

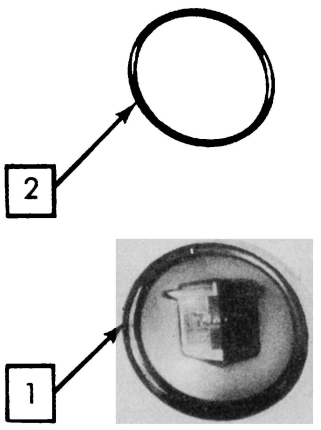
Use only powdered or flake graphite in the key cylinder lock.

52. GLOVE BOX DOOR—CLOCK OPENING COVER

1949 "600" and "Ambassador 6" Series

Removal Procedure

1. Open glove box door.
2. Push clock cover outward, from inside of door, then remove cover from door (Fig. 52).



1. Cover
2. Retaining ring (rubber)

Figure 52—Clock Opening Cover and Retaining Ring (rubber)—(Glove Box Door).

To Install

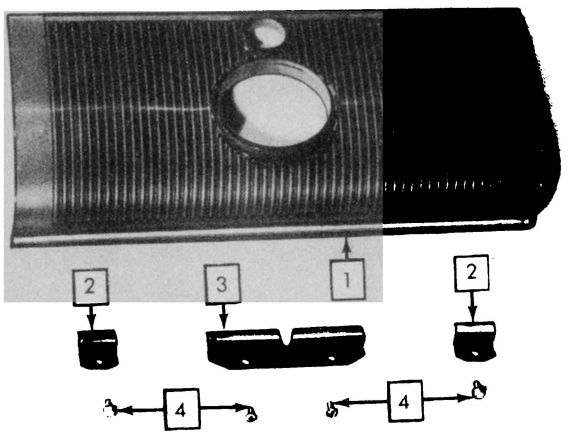
3. Place round rubber retaining ring on inside flange of cover.
4. Roll round retaining ring in groove at inside flange of cover.
5. Place cover against outside face of glove box door in cover opening, pushing cover into door opening as far as possible. This movement rolls rubber retainer out of groove of cover up tight against inside flange of glove box door, holding cover in place.

53. GLOVE BOX DOOR OVERLAY

1949 "600" and "Ambassador 6" Series

Removal Procedure

1. Remove glove box door lock (Subject 51).
2. Remove clock, or clock opening cover, from door (Subject 52).
3. Close glove box door and remove screws holding clips to bottom of door. Hold overlay tight against door to prevent falling when screws are removed (Fig. 53).



1. Overlay
2. End clips
3. Center clip
4. Clip screws

Figure 53—Glove Box Door Overlay Clips and Screws.

To Install, Reverse Removal Procedure

54. GLOVE BOX DOOR

1949 "600" and "Ambassador 6" Series

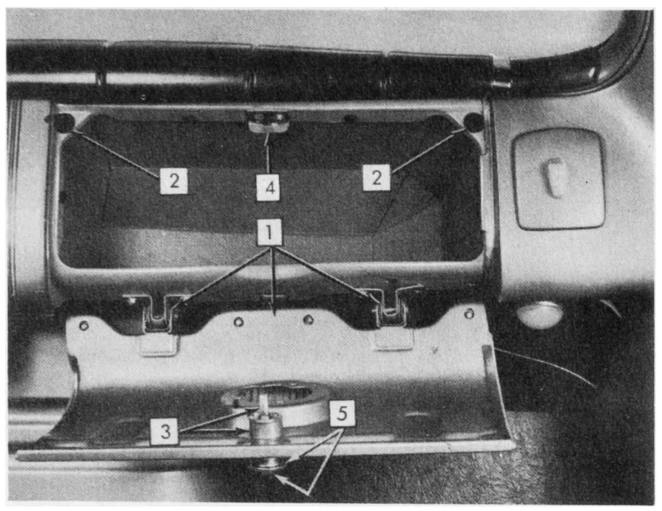
1. Hinge Adjustment

The glove box door is adjustable at the hinges for proper alignment in the opening of the instrument panel.

2. Purpose of Rubber Bumpers

Two rubber bumpers are located at the upper corner of the instrument panel opening to cushion

the door. This provides sufficient spring tension in the door for catching and releasing the lock catch from the striker plate when the door is opened or closed (Fig. 54).



1. Glove box door assembly and hinges
2. Rubber bumpers
3. Lock and lock catch
4. Lock striker plate
5. Lock handle and push button

Figure 54—Glove Box Door.

3. Striker Plate Adjustment

The lock striker plate is adjustable in and out, to hold the door firm against the rubber bumpers, *and permit the lock catch to engage the striker plate in a latched position under moderate closing of the door.*

4. Using Lock as Handle

The lock serves as a handle and push button control to open and close the door. A sufficient portion of the lock extends out of the door to provide a grip for the fingers. To release the lock catch from the striker plate, push the center portion of the lock in with the thumb.

5. Locking with Keys

When the door is closed and locked with the keys, this locks out any movement of the push button control. Therefore the lock catch cannot be moved to open the door until the push button control is released by unlocking it with keys.

6. Adjustments

Any adjustments made to the hinges and lock striker should result in free operation of the door as described in Paragraphs 3 and 4.

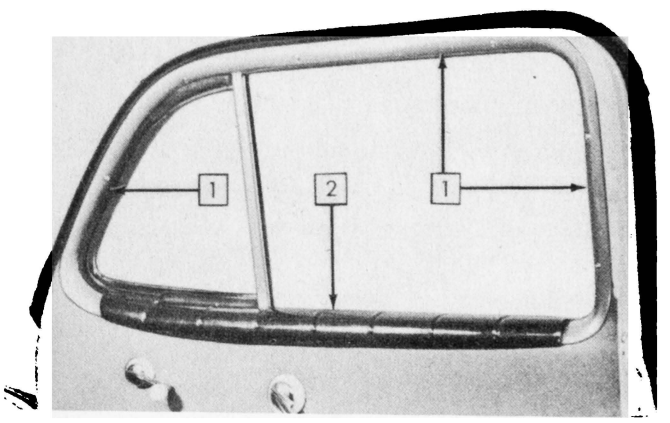
7. Lubrication

Apply a very thin coat of Lubriplate to the lock striker plate and lock catch.

55. FINISH MOLDING OVERLAY—FRONT AND REAR DOORS

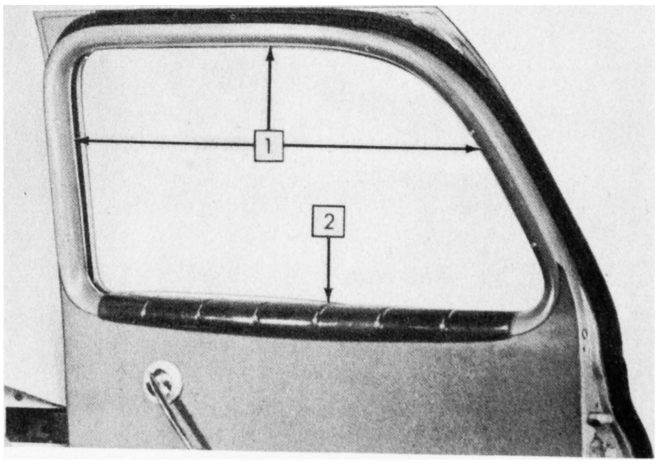
1949 "600" and "Ambassador 6" Series

The overlay on both front and rear door finish moldings is stapled to the inside flange of the finish molding. The edge of the overlay and staples are covered by the door glass weatherstrip, which is also stapled to the inside flange of the finish molding (Figs. 55 and 55-A).



1. Finish molding
2. Overlay

Figure 55—Front Door Finish Molding and Overlay.



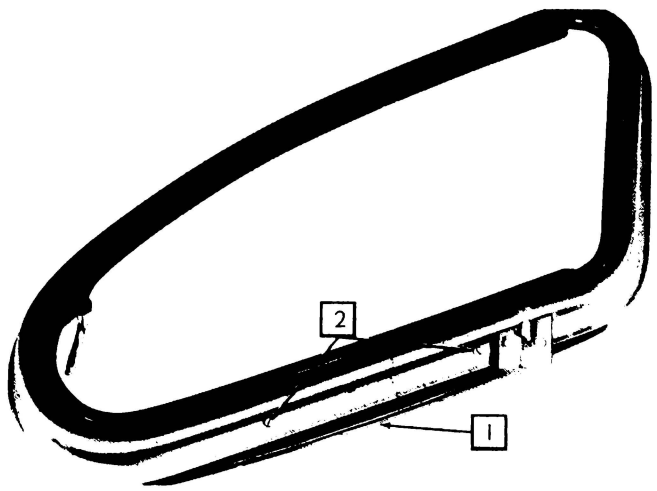
1. Finish molding
2. Overlay

Figure 55-A—Rear Door Finish Molding and Overlay.

The weatherstrip serves as a seal against the glass and prevents the staples from contacting the glass.

Rear Quarter Ventilator

The overlay on the rear quarter ventilator is screwed to the finish molding frame. It may be removed or replaced by removing the ventilator assembly from the car and removing the two fastening screws as shown in Figure 55-B.



1. Overlay
2. Overlay fastening screws

Figure 55-B—Rear Quarter Ventilator Overlay Removal.

For removal and installation of rear quarter ventilator assembly, see Subject 33.

56. WINDSHIELD STAINLESS STEEL REVEAL MOLDING

1949 "600" and "Ambassador 6" Series

The windshield reveal molding is one piece with an expansion joint in the center at the top. The joint is covered by a stainless steel clincher type cap that snaps on over the ends of the molding.

This molding is curved to conform to the one-piece curved windshield glass. When it is installed as an assembly with the glass and channel rubber, the inside "L" shaped flange extends into the channel rubber to the inside of the glass. This creates a bind between the outside face plate of the molding and the channel rubber and forces the outside lip of the channel rubber tight against the outer surface of the glass.

When assembled in the car, it is impossible to remove this molding without first removing the complete windshield assembly from the car. See Figure 58-D for cross section view of this assembly.

To remove or install this molding, see Subject 58.

57. REAR WINDOW STAINLESS STEEL REVEAL MOLDING

1949 "600" and "Ambassador 6" Series

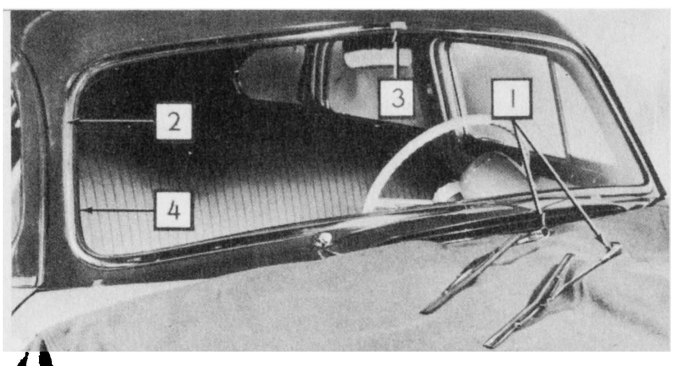
The rear window reveal molding is similar in design and serves the same purposes as the windshield reveal molding.

It is impossible to remove this molding without first removing the complete rear window assembly. This assembly consists of a channel rubber, glass and the reveal molding. For a cross section view of the assembly, see Subject 59, REAR WINDOW GLASS.

58. WINDSHIELD GLASS IN CARS EQUIPPED WITH STAINLESS STEEL REVEAL MOLDINGS

1949 "600" and "Ambassador 6" Series

The curved windshield glass is one piece of Bent Duplate Glass. It is set into the body from the outside as an assembly. This assembly consists of glass, channel rubber, and a stainless steel reveal molding.

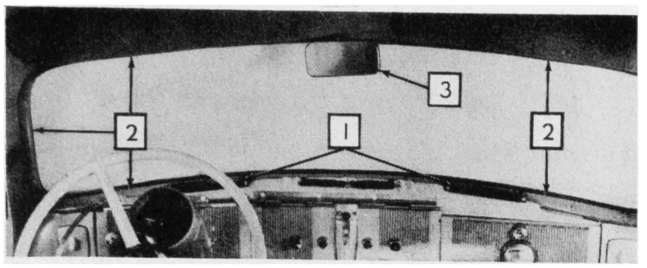


1. Wiper arms and blades
2. Stainless steel molding
3. Stainless steel molding joint cover plate
4. Channel rubber

Figure 58—Windshield Wiper—Arms and Blades Removed.

Removal Procedure

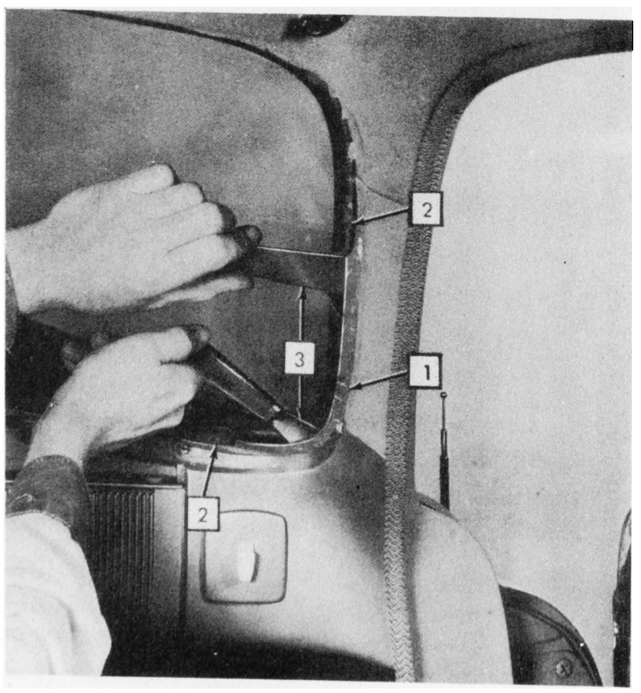
1. Place cover over top of hood and cowl for protection of paint.
2. Remove windshield wiper arms and blades (Fig. 58).
3. Remove instrument panel top overlay (Subject 46).
4. Remove rear view mirror, defroster caps, and finish molding (Fig. 58-A).



1. Defroster outlet caps
2. Windshield finish molding (one-piece, joint at bottom)
3. Rear view mirror

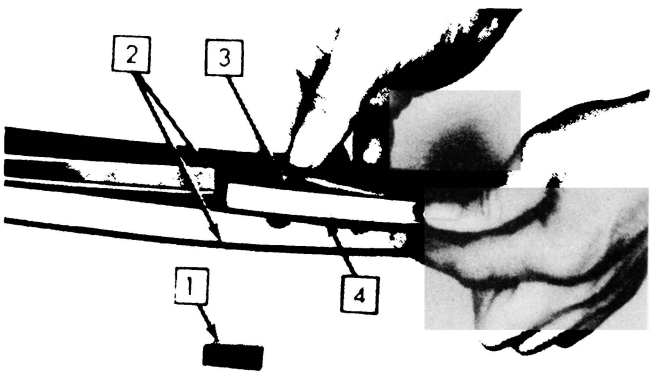
Figure 58-A—Parts to Be Removed for Removal of Windshield Glass.

5. Use fiber or hard wood wedge-shaped tool to break seal of rubber lip to windshield opening flange.
6. Use two putty knives to lift lip of rubber over flange of windshield opening, pressing glass assembly outward (Fig. 58-B). Then, from outside, lift glass assembly from windshield opening and place on padded bench or table.
7. Remove molding joint cover plate or slide on molding to expose joint.
8. Pull channel rubber away from glass, spread lip of rubber and carefully lift molding from groove in rubber (Fig. 58-C).
9. Remove channel rubber from glass.
10. With cloth dampened in gasoline, naphtha or cleaning fluid, remove all dried rubber cement from channel rubber and flange of windshield opening in body.



1. Windshield opening flange
2. Lip of windshield rubber
3. Putty knives

Figure 58-B—Removing Windshield Glass Assembly, Lifting Lip of Channel Rubber over Flange of Windshield Opening.

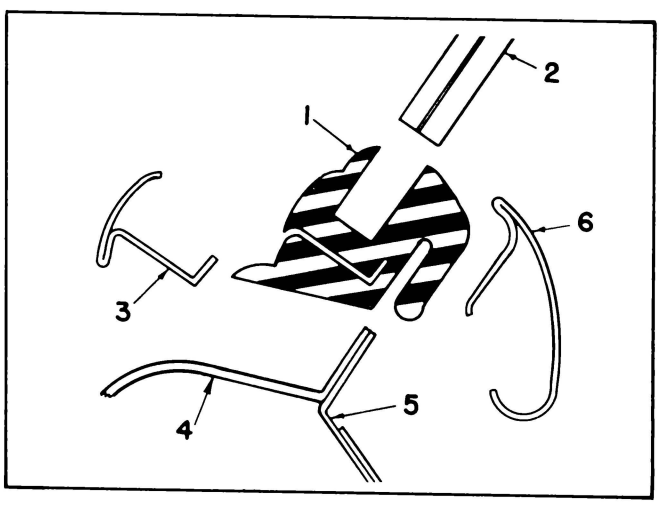


1. Molding cover plate removed
2. Rubber and molding pulled off glass
3. Spreading lip of rubber
4. Lifting molding from rubber

Figure 58-C—Removing Reveal Molding from Channel Rubber.

Glass Assembly Procedure

1. Install channel rubber (item 1) onto glass (item 2 of Figure 58-D) over one end of glass.

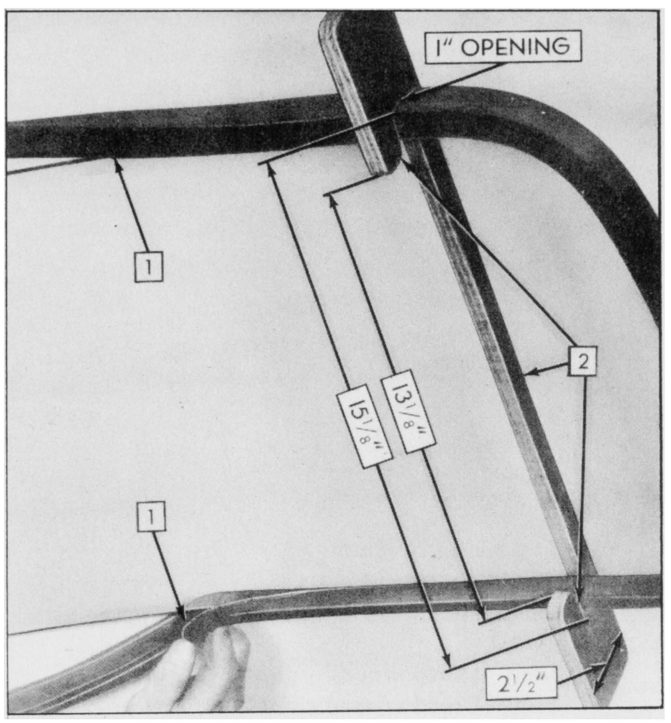


1. Channel rubber
2. Glass
3. Reveal molding
4. Cowl top
5. Dash panel
6. Finish molding

Figure 58-D—Exploded View of Windshield Glass

Assembly and Body Attaching Parts.

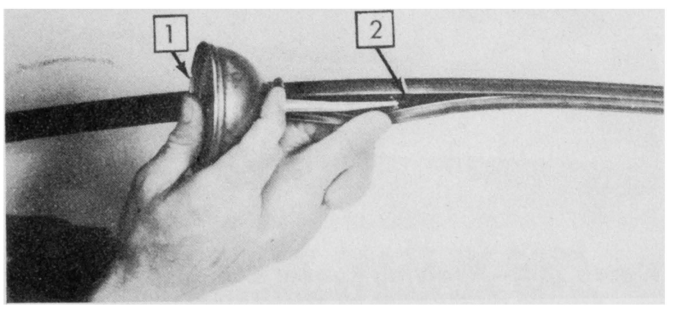
2. Install wood "C" clamp over end of glass and rubber to hold rubber on glass until it is completely installed (Fig. 58-E).



1. Installing rubber on glass
2. Wood "C" clamp (½" plywood) placed over end to hold rubber on glass until completely installed

Figure 58-E—Installing Channel Rubber on Windshield Glass.

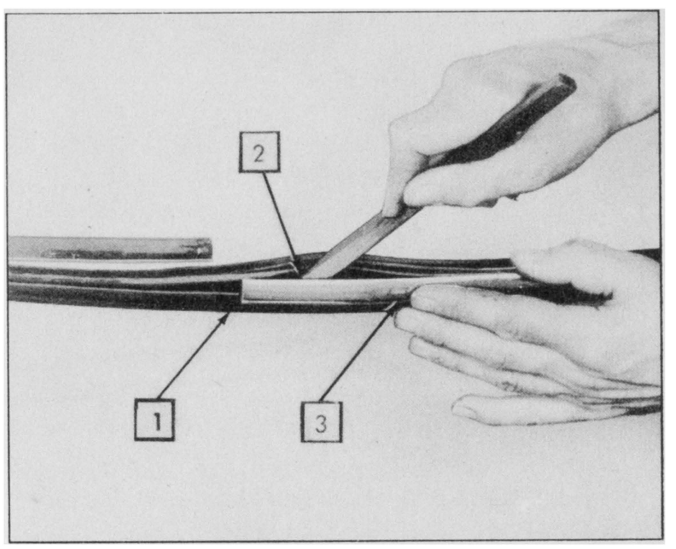
3. Apply liquid soap and water to molding groove in channel rubber (item 2, Fig. 58-F). This permits free movement of molding into channel rubber.



1. Liquid soap in oil can
2. Groove in rubber for stainless steel molding

Figure 58-F—Applying Liquid Soap to Molding Groove in Rubber After Rubber is Installed on Glass.

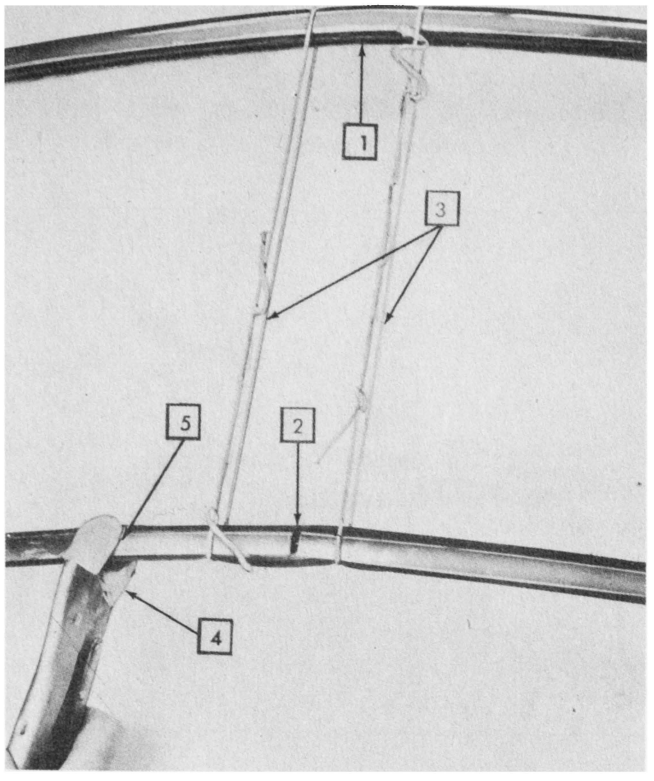
4. Space the molding on glass and rubber channel. Then start one end of molding in groove of rubber at top center of glass. Use a fiber or hard wood wedge-shaped tool to spread lip (Fig. 58-G). Open groove and push molding flange into groove (item 3, Fig. 58-G). Press molding down into rubber channel.



1. Top center of glass and rubber
2. Spreading lip to open groove in rubber
3. Pressing molding down into rubber

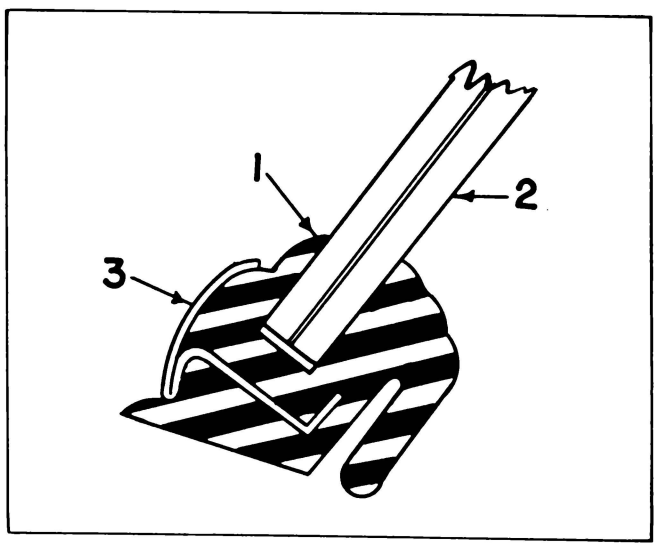
Figure 58-G—Installing Molding Into Groove of Rubber.

5. Tie a cord around center of glass to hold rubber and reveal molding onto glass. Continue with operation 4 until complete molding is set into groove of rubber. Now tie another cord around center of glass to hold other end of molding and rubber onto glass (Fig. 58-H). Each cord should be 4 ft. long.
6. With wide faced pliers, *taped to prevent scratching moldings,* lightly compress molding into rubber. Start at bottom center and work around glass to end of molding. Then start at bottom center and work around other end of glass to end of molding (Fig. 58-H). This procedure moves the molding in the rubber to the expansion joint, allowing the molding to seat properly in the rubber. (See Figure 58-I.)
7. Use two cords 9 ft. long. Start at top center of glass with one cord and insert cord in groove of rubber around one end of glass to bottom center. Then insert the other cord in groove of rubber around the other end of glass, overlapping ends of cords at both top and bottom center as shown in Figure 58-J.



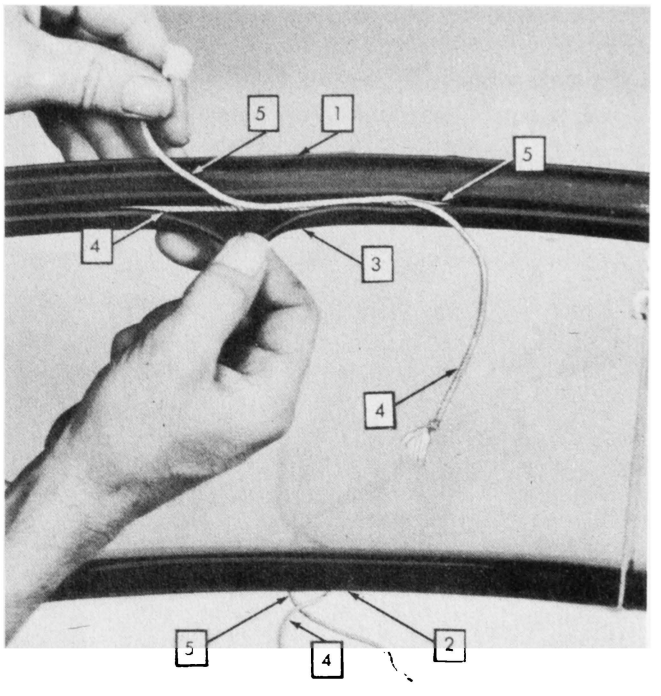
1. Bottom center of glass
2. Top center of glass
3. Cord holding rubber and molding to glass (4 ft. long)
4. Taped pliers
5. Compressing molding in rubber

Figure 58-H—Compressing Molding into Rubber



1. Channel rubber tight against glass
2. Glass
3. Reveal molding set into rubber with outside edges tight against rubber

Figure 58-I—Glass Assembly Properly Assembled.



1. Top center of glass
2. Bottom center of glass
3. Groove in rubber with cords overlapping at center
4. Ends of cord around left end of windshield
5. Ends of cord around right end of windshield

Figure 58-J — Inserting Two Cords in Groove of Channel Rubber (Used to Lift Lip of Rubber over Flange of Windshield Opening.)

Installation Procedure of Windshield Glass Assembly in Body

1. Apply Nash rubber cement to *bottom of flange* on outside of windshield opening (Fig. 58-K).

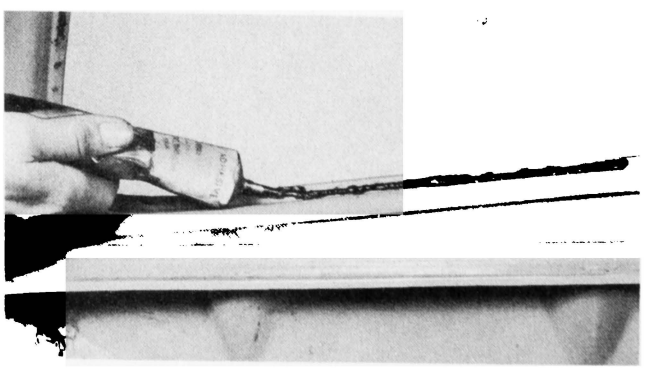


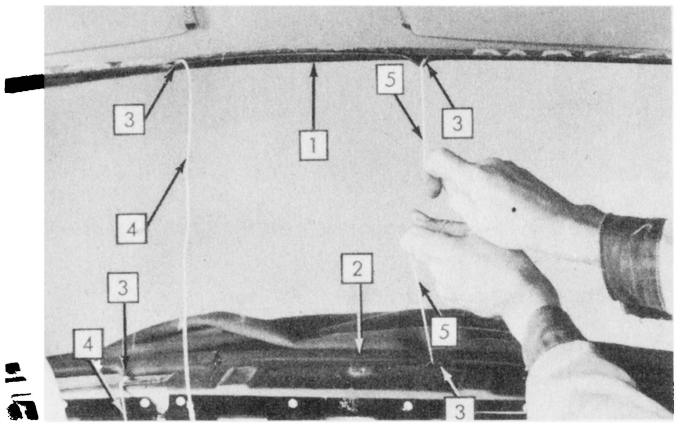
Figure 58-K—Applying Rubber Cement to Bottom of Flange on Outside of Windshield Opening.

CAUTION: *Do not apply cement to top of body flange, as it will come off when lip of rubber is lifted over windshield opening flange and will require considerable cleaning to finish job.*

2. Place glass assembly, with rubber and molding installed, into windshield opening, from outside of body. Center the assembly in windshield opening. Now remove cords that were installed to hold rubber and molding onto glass (item 3, Fig. 58-H).
3. From the inside of car, pull both top cords to lift lip of rubber over the windshield opening flange. Start at top center and lift rubber lip for a distance of 6 inches.

   Now pull both bottom cords, lifting lip of rubber over windshield opening flange at bottom center for a distance of 6 inches.
4. Pull top and then bottom cords on right until complete right side is in place.

   Pull top and then bottom cords on left side until complete left side is in place (Fig. 58-L).



1. Top center
2. Bottom center
3. Lifting lip of rubber over flange of windshield opening
4. Left end cord—top and bottom end
5. Right end cord—top and bottom end

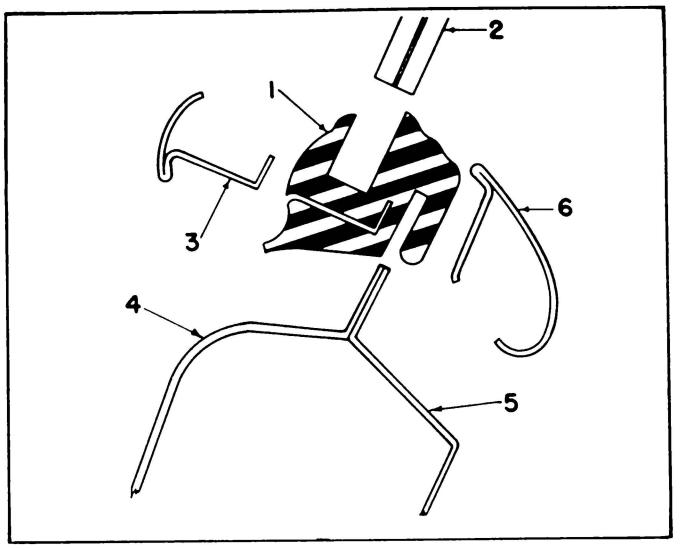
Figure 58-L—Lifting Lip of Channel Rubber over Flange of Windshield Opening.

5. Install finish molding defroster outlet caps and rear view mirror.
6. Install instrument panel top overlay.
7. Clean glass and install windshield wiper arms and blades.

59. REAR WINDOW GLASS IN CARS EQUIPPED WITH STAINLESS STEEL REVEAL MOLDING

1949 "600" and "Ambassador 6" Series

The curved one-piece rear window glass is known as Bent Herculite.

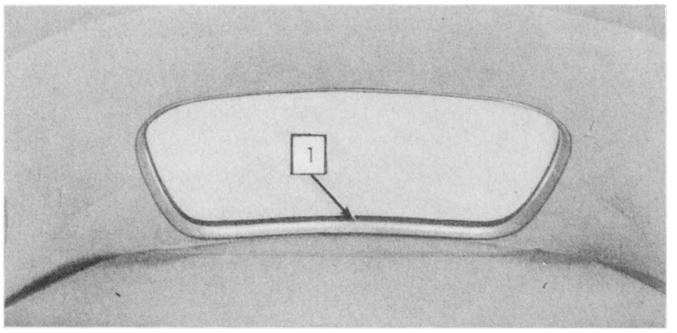


1. Channel rubber
2. Glass
3. Reveal molding
4. Roof panel (under window)
5. Rear window frame (inside body)
6. Finish molding

Figure 59—Exploded Cross Section View of Rear Window Assembly and Body Attaching Parts.

The glass is set into the body from the outside as an assembly. This assembly consists of glass, channel rubber, and a stainless steel reveal molding (Fig. 59).

The procedures for removal and installation follow the same principles as for the windshield (Subject 58).



1. Finish molding

Figure 59-A—Rear Window Finish Molding.

Removal Procedure

Refer to Subject 58, WINDSHIELD REMOVAL PROCEDURE.

Glass Assembly Procedure

Refer to Subject 58, WINDSHIELD GLASS ASSEMBLY PROCEDURE.

NOTE: *The "C" clamps are not required for the installation of this glass.*

Installation Procedure of Rear Window Assembly in Body

Refer to Subject 58, INSTALLATION PROCEDURE OF WINDSHIELD GLASS ASSEMBLY IN BODY.

60. CORRECTION OF WATER LEAKAGE AT WINDSHIELD OR REAR WINDOW ON CARS EQUIPPED WITH STAINLESS STEEL REVEAL MOLDINGS

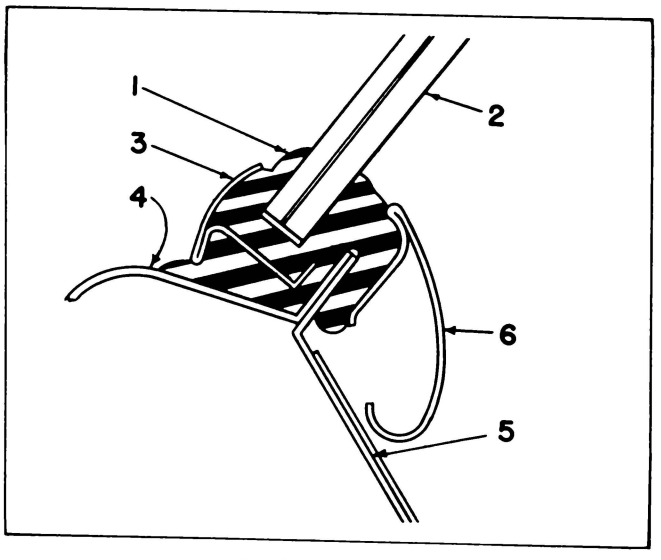
1949 "600" and "Ambassador 6" Series

Many times it is assumed windshields leak when in reality the leakage is from another source. Possible sources are loose windshield wiper pivot shafts at top of cowl, clogged cowl ventilator drain troughs, loose hood lacing screws, loose screws on outside of dash, or insulation pad clips.

Leakage between sealer rubber and glass can be observed without removing any parts.

To locate leakage between sealer rubber and body it is necessary to remove the finish molding.

To correct leakage at either source it is necessary to remove the finish molding and reseal.



1. Channel rubber
2. Glass
3. Reveal molding
4. Cowl top
5. Dash panel
6. Finish molding

Figure 60—Cross Section Windshield Glass or Rear Glass Assembly Set into Body. (5 Becomes Rear Window Frame for Rear Glass Assembly.)

Sealing Windshield

1. Remove instrument panel top overlay (Subject 46).
2. Remove rear view mirror, defroster caps and finish molding (Fig. 58-A).
3. To seal between channel rubber and body, use pressure gun to apply rubber cement (Fig. 60A).

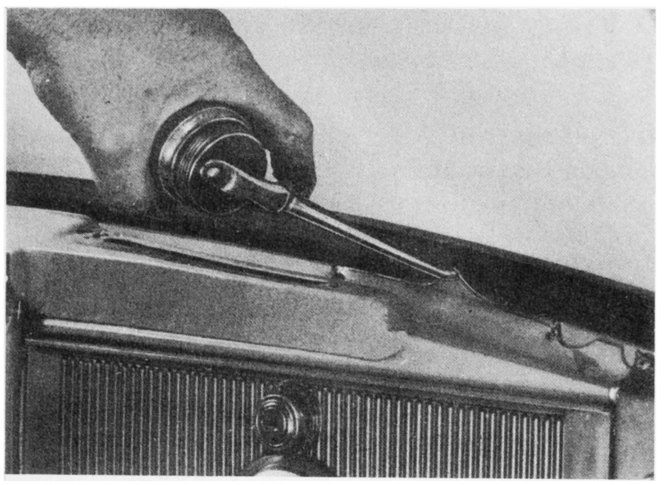


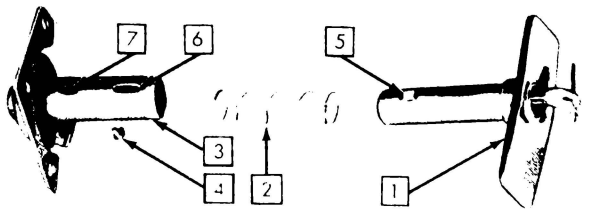
Figure 60-A—Sealing Between Rubber and Body.

Sealing Rear Window

1. Remove finish molding (Fig. 59-A).
2. To seal between channel rubber and body, use pressure gun (Fig. 60-A).

61. REAR DECK COVER KEY LOCK HANDLE

1949 "600" and "Ambassador 6" Series



1. Key lock handle
2. Lock release spring
3. Lock
4. Handle locking screw
5. Handle lock bolt
6. Lock bolt slot (open position)
7. Lock bolt slot (closed or locked position)

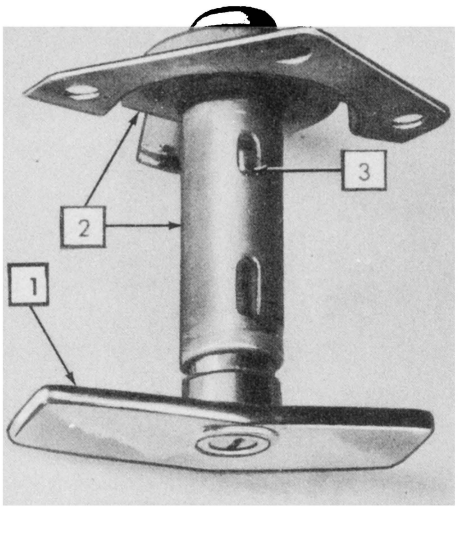
Figure 61—Rear Deck Cover Key Lock Handle and Lock.

REAR DECK COVER KEY LOCK HANDLE

Operation

The rear deck cover key lock handle is held into the cylinder of the deck cover lock by a set screw. This set screw is concealed when the deck cover is closed (Fig. 61).

The deck cover lock cylinder has two open slots to engage the key lock handle lock bolt. One slot engages the lock bolt when the handle is pushed in flush to the locked position (Fig. 61-A).



1. Rear deck handle
2. Rear deck lock and cylinder
3. Handle lock bolt locked in deck cover lock cylinder (closed position slot)

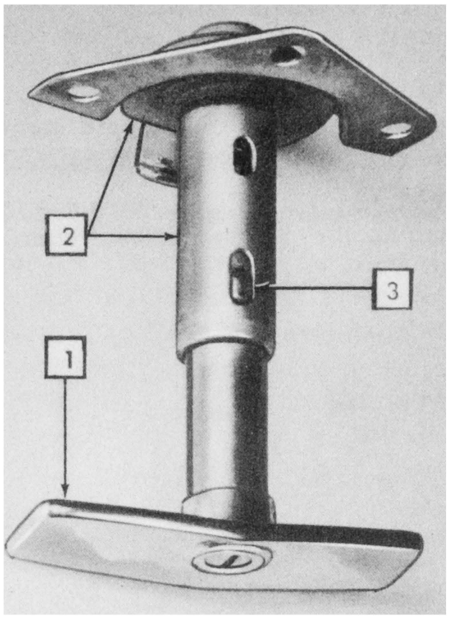
Figure 61-A—Rear Deck Handle Locked in Closed Position.

When the handle is extended, the other slot engages the lock bolt for operation of the cover lock to open or close the cover (Fig. 61-B).

The deck cover handle cannot be extended to operate the cover lock until it is unlocked with the key. To unlock, turn the key one-fourth turn to the left. This releases the key lock bolt from the slot in the cover lock and a coil spring in the lock cylinder automatically extends the handle (Figs. 61 and 61-C).

The key can be removed only when the handle is in the extended position. It is not necessary to have the key in the handle when it is pushed back to its locked position.

Turning the deck cover handle one-half turn to left will release the cover lock for opening the cover (Fig. 61-D). After the cover is closed, turn the handle one-half turn to right. This will lock the cover to the body.



1. Rear deck handle
2. Rear deck lock and cylinder
3. Handle lock bolt locked in deck cover lock cylinder (open position slot)

Figure 61-B—Rear Deck Handle Locked in Open Position.

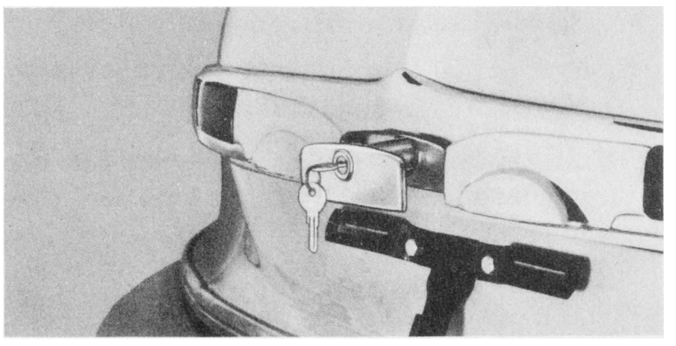
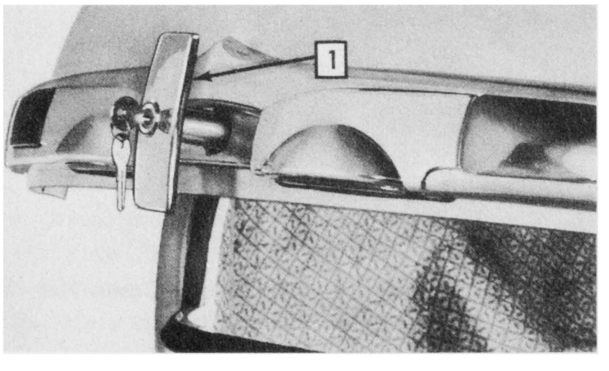


Figure 61-C—Rear Deck Handle in Extended Position.



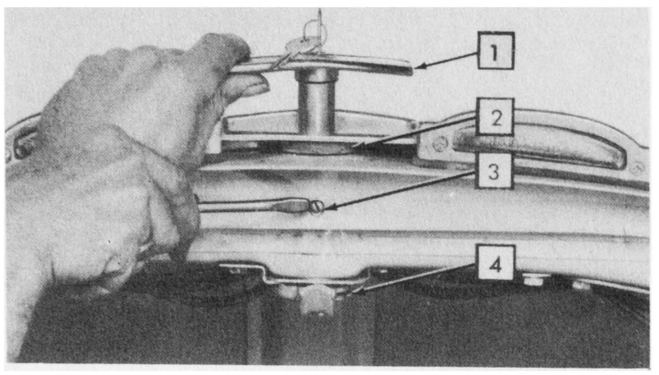
1. Handle turned one-half turn to left releases trunk cover lock. Cover can then be raised.

Figure 61-D—Turning Handle to Raise Cover.

Removing Deck Cover Handle

With deck cover raised, key in handle, and handle extended to horizontal position:

1. Move handle down into lock until handle locking screw is in line with hole in deck cover (Fig. 61-F).
2. Remove handle locking screw (item 3, Fig. 61-E).

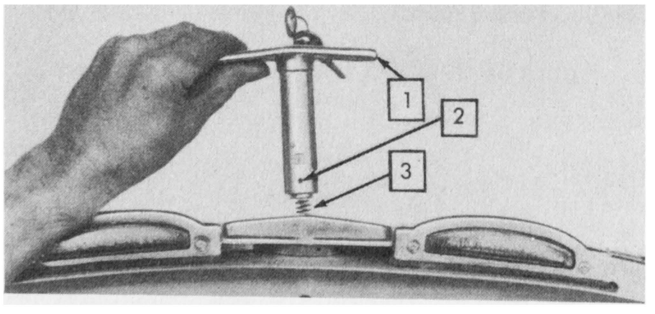


1. Key lock handle
2. Handle rubber sealer
3. Handle locking screw
4. Trunk cover lock

(Handle turned in horizontal position exposes handle locking screw for removal)

Figure 61-E—Removing Handle Locking Screw for Handle Removal from Deck Cover Lock.

3. Turn key to left to release handle lock bolt from cover lock cylinder. Lift handle from deck cover and lock cylinder (Fig 61-F).



1. Key lock handle
2. Threaded hole for retaining screw
3. Lock release spring

Figure 61-F—Removing Deck Cover Handle from Lock.

CAUTION: *Remove lock release spring to avoid misplacing it (item 3, Fig. 61-F).*

To Install, Reverse Removal Procedure

Maintenance

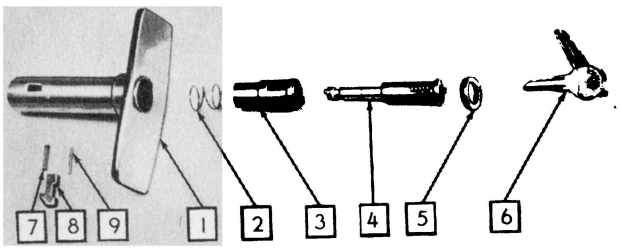
Cleaning

Gasoline (one that does not contain lead) may be used for cleaning, or the lock may be removed, disassembled and cleaned with alcohol or benzol. Blow out with air hose and lubricate.

Lubrication

Finely powdered graphite is recommended as a lubricant for all working parts of the handle assembly.

The rear deck handle assembly consists of several working parts. Figure 61-G shows them in their assembly sequence.



1. Handle
2. Spring
3. Housing
4. Cylinder and shaft
5. Bezel
6. Keys
7. Lock bolt spring
8. Lock bolt
9. Cylinder and shaft retaining pin

Figure 61-G—Rear Deck Handle Assembly.

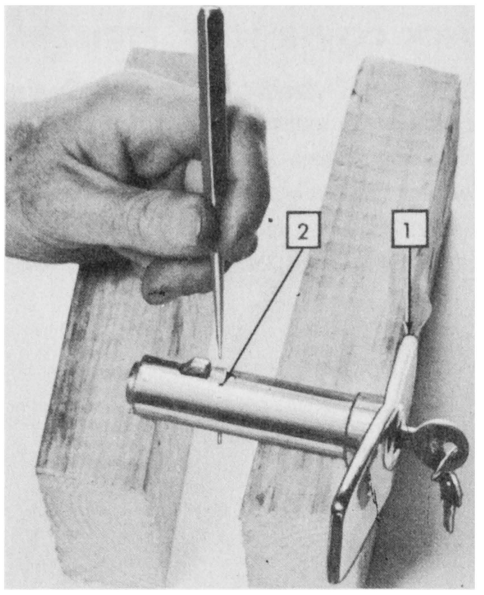
Handle Disassembly Procedure

1. Place handle on two wood blocks to prevent damage to handle.
2. Use small drift to remove cylinder to shaft retaining pin (Fig. 61-H).
3. Hold handle with finger over bezel (item 2) and thumb over lock bolt (item 4) as shown in Figure 61-I.
4. Tap end of handle shell lightly with plastic mallet until bezel is loose (Fig. 61-I).
5. Release thumb pressure on lock bolt and remove lock bolt and lock bolt spring.
6. Release pressure of finger on bezel and remove bezel, key cylinder, housing, and spring from handle shell.
7. Clean and lubricate.

To Assemble, Reverse Removal Procedure

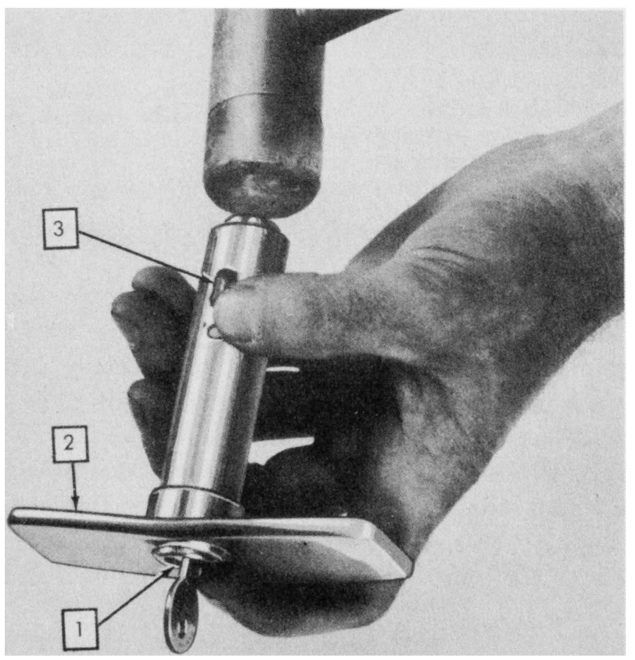
8. After cylinder to shaft retaining pin is installed,





1. Handle
2. Cylinder and shaft retaining pin

Figure 61-H—Removing Key Lock Assembly from Rear Deck Cover Handle.



1. Bezel
2. Handle
3. Lock bolt

Figure 61-I—Removing Bezel from Handle (Around Key Lock Cylinder).

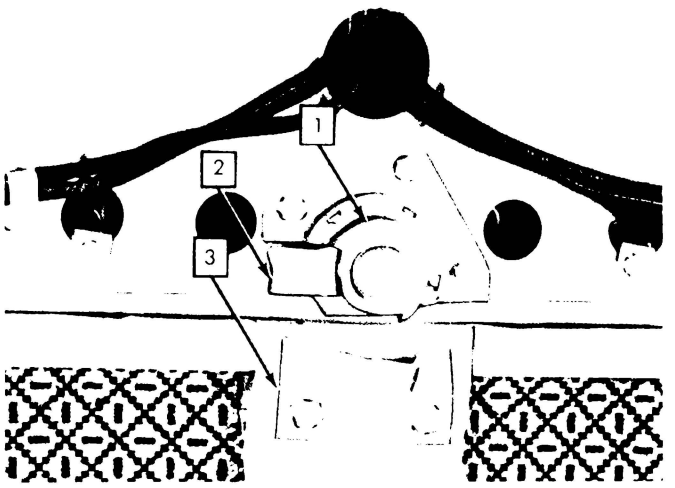
it should be carefully staked in on both sides to prevent any movement. See Figure 61-H.

9. Install handle in deck cover and lock.

62. REAR DECK COVER LOCK

1949 "600" and "Ambassador 6" Series

The rear deck cover lock is provided with a cylinder housing that extends into the deck cover from the inside (Fig. 62). The rear deck handle shaft is inserted into the cover and lock housing from the outside.



1. Deck cover lock
2. Lock bolt (in unlocked position)
3. Lock striker and catch

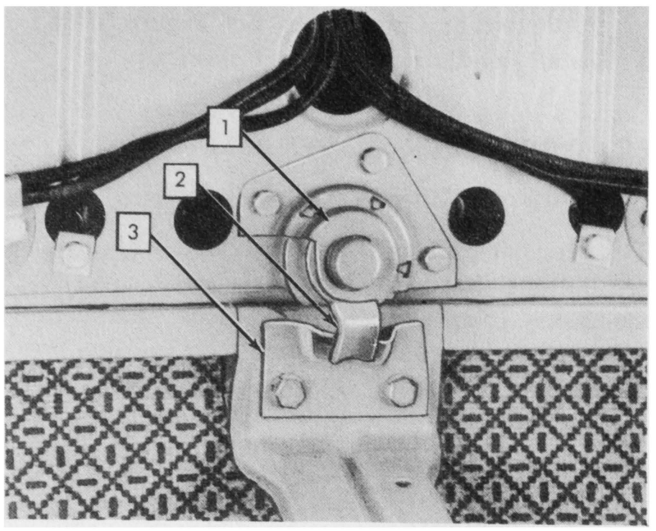
Figure 62—Rear Deck Cover Unlocked.

The lock handle housing has two slots on its upper surface for the operation of the handle lock bolt. There is also a long slot on the bottom surface for the handle locking screw, which permits the handle to move from the locked position to the extended position (Fig. 62-B).

When the lock handle housing is extended into the lock case, it is fastened to the lock bolt.

When the deck cover is raised, a lock bolt return spring in the lock returns the lock bolt to the unlocked or open position (Fig. 62-A). This eliminates the possibility of damaging the lock bolt when the deck cover is being closed, unless the handle is deliberately turned.

The lock case is fastened to the inside of the rear deck cover by three cap screws. The screw holes in the lock case are slightly oversize to allow for alignment.



1. Deck cover lock
2. Lock bolt (in locked position)
3. Lock striker and catch

Figure 62-A—Rear Deck Cover Locked.

Removal Procedure

1. Remove key lock handle (Figs. 61-E and 61-F).
2. Remove three screws holding lock to cover, and remove the deck cover lock (Fig. 62-B).

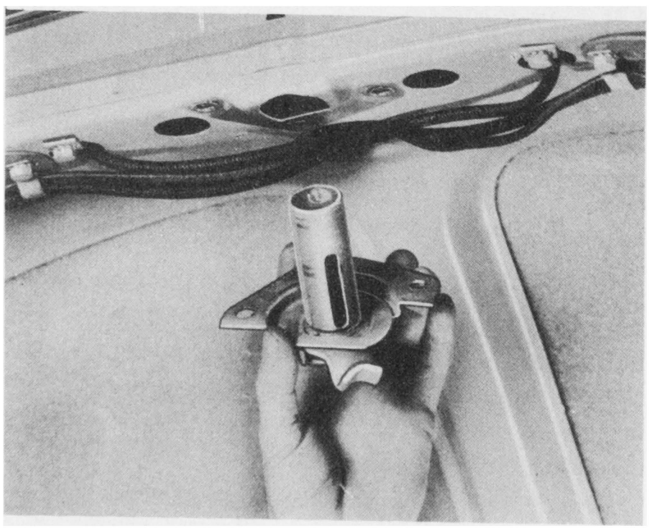


Figure 62-B—Removing Deck Cover Lock from Cover.

The action of the lock bolt engaging the lock striker should be free, yet firm so as to compress the deck cover sealer rubber. Lubricate and adjust lock striker as required.

Lubrication

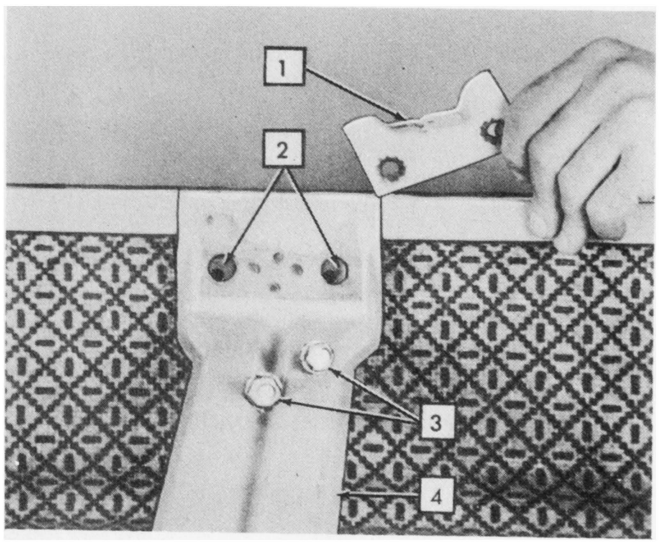
Use engine oil in lock mechanism and around the lock bolt, also between the handle and the handle cylinder. This can be applied at handle retaining screw hole.

Lubricate both the lock bolt and striker plate with a thin film of Lubriplate.

63. REAR DECK COVER LOCK STRIKER

1949 "600" and "Ambassador 6" Series

The rear deck cover lock striker is fastened to a tapped movable lock plate. This lock plate is encased in the rear deck lower center panel to floor pan brace. Movement of the striker plate is for adjustment of the rear deck cover lock (Fig. 63).



1. Lock striker
2. Striker adjustable lock plate
3. Lock striker screws
4. Rear deck lower center panel to floor pan brace

Figure 63—Rear Deck Cover Lock Striker.

The striker plate can be moved up, down or sideways as required to contact and hold the lock bolt properly. To adjust the striker plate, move it sideways so that the convex portion of the lock bolt will pass over center on the convex portion of the lock striker. It should also be moved down enough so that the cover compresses the sealer rubber slightly. This will hold the cover firm but will not cause the handle to turn hard. See Figures 62 and 62-A.

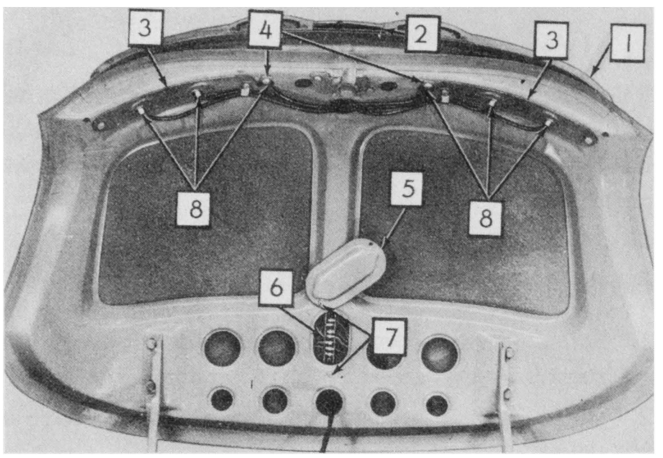
64. REAR DECK COVER ORNAMENT

1949 "600" and "Ambassador 6" Series

The rear deck cover ornament contains the individual lenses for the directional signal lights, the stop lights and the license plate lights. These lenses

are fastened and sealed to the ornament from the inside by retaining plates. The individual sockets for the directional lights and tail lights are in the right and left lamp housing. They can be removed individually for bulb replacement without removing the housing.

The license plate lights are fastened to the rear deck cover inner plane. They are removed by removing one screw that holds the light socket bracket to the deck cover inner panel. The wire harness for these lights enters the deck cover at the top center (item 7, Fig. 64), and connects to a junction block (item 6, Fig. 64), under the inner panel of the rear deck cover.



1. Ornament
2. Key lock handle
3. Lamp housing (tail and directional)
4. License lamp socket
5. Junction block cover
6. Junction block
7. Junction block screws
8. Each socket removable individually

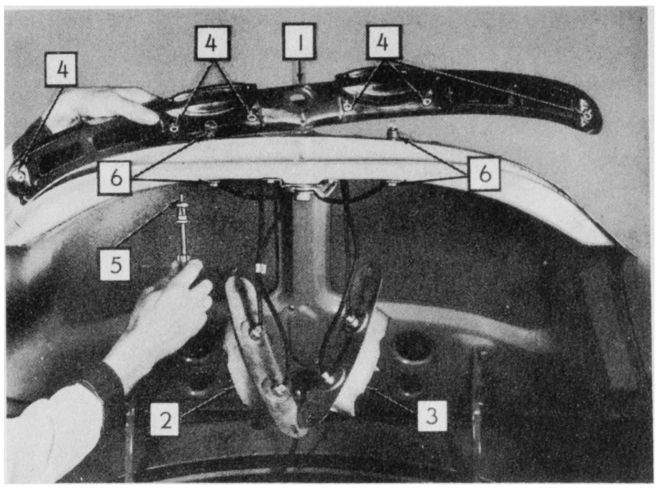
Figure 64—Rear Deck Cover Ornament.

Removal Procedure

1. Remove cover key lock handle (Fig. 61-F).
2. Remove left and right lamp housings.
3. Remove six cap screws through cut-outs in cover inner panel (Fig. 64-A).
4. Lift ornament off deck cover.

To Install, Reverse Removal Procedure

CAUTION: *When removing or installing ornament, care should be exercised not to damage gaskets. If they become loose, re-cement them in place.*



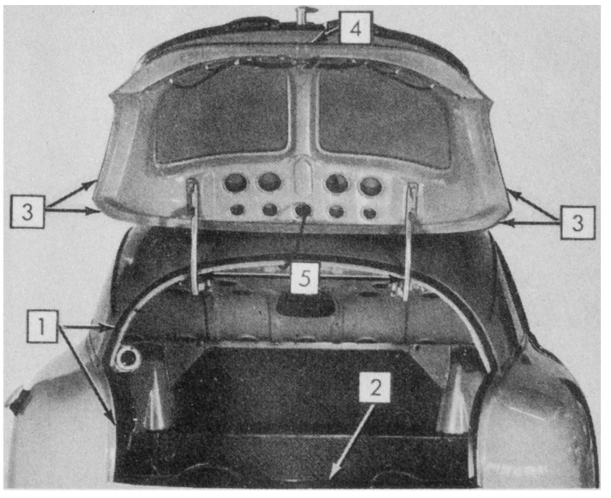
1. Ornament
2. Lamp housing—left
3. Lamp housing—right
4. Tapped holes in ornament
5. Cap screw—removed from ornament
6. License lamps removed from inside of the deck cover

Figure 64-A—Removing Rear Deck Cover Ornament.

65. REAR DECK COVER HINGES

1949 "600" and "Ambassador 6" Series

The rear deck cover interior hinges are counterbalanced with a coil spring. This provides for easy

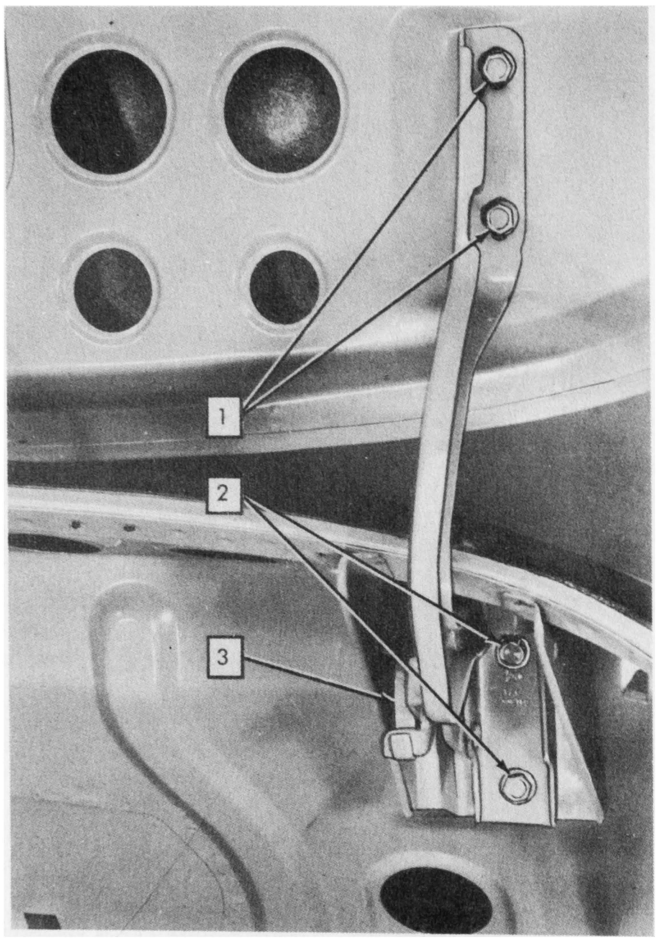


1. Sealer rubber—top and sides
2. Sealer rubber—bottom
3. Flange on deck cover contacting sealer rubber—top and sides
4. Flange on deck cover contacting sealer rubber—at bottom
5. Deck cover hinges

Figure 65—Rear Deck Cover Hinges with Coil Springs and Sealer Rubber.

operation of the deck cover as well as for holding the cover in the raised position (Fig. 65).

The hinges are provided with elongated holes for adjustment of the cover to the hinges and the hinges to the body (Fig. 65-A).



1. Elongated holes in hinges to cover
2. Elongated holes in hinges to body
3. Hinge coil spring

Figure 65-A—Deck Cover Hinges Adjustable to Body and Cover.

Adjustment

1. To move cover up or down, loosen the rear deck cover hinge screws and move cover as desired.
2. To move the cover sideways and center it in the opening, loosen rear deck cover hinge screws and move cover as desired. If this does not provide sufficient movement, loosen body hinge screws, and move cover and hinges as desired.
3. To adjust the cover so it will close more tightly on the sealer rubber along the top edge, loosen body hinge screws and move hinges down on the body. Raise hinges if cover is too tight on the sealer rubber.

NOTE: *It may be necessary to increase the size of the holes in the hinges to make this adjustment. This can be done by filing the present holes.*

Removing Hinges for Replacement

1. Remove hinge from body and cover.
2. Install new hinge.
3. Adjust from outside unless assistance is available to advise adjustment required. In this case, adjustments can be made from inside with the cover closed.

66. REAR DECK COVER

1949 "600" and "Ambassador 6" Series

The rear deck cover consists of an inner and outer panel flanged and spot welded together at the flange. They are available in service with a prime paint coat.

Removing Deck Covers

1. Raise cover, open terminal block cover, and remove wires from body to terminal block.
2. Place heavy pad between body and top edge of cover.
3. Loosen all screws, hinges to cover.
4. Hold cover firm so as not to damage cover or body when screws are removed.

To Install, Reverse Removal Procedure

Installing New Deck Cover

1. Cover should be primed and painted before installation.
2. Install hinges to body.
3. Install cover on hinges, closing the cover. Then space the cover so that it is even at sides, top and bottom, and tighten all screws.
4. Rivet molding clips to sides of cover and install molding. See Subject 44.
5. Install terminal junction block (Fig. 64).
6. Insert body wiring harness into cover and hook up to terminals.
7. Install ornament and lights (Fig. 64-A).
8. Hook up light wires to terminal junction block.
9. Check switches and brake for proper operation of lights.

10. Install terminal junction cover plate.
11. Install cover lock. See Subject 62.
12. Install key lock handle. See Subject 61.

67. REAR DECK COVER SEALER RUBBER

1949 "600" and "Ambassador 6" Series

The rear deck cover sealer rubbers are of sponge rubber. Their purpose is to seal around the deck cover, eliminating possible water leaks between the rubber and the cover.

These rubbers are in two pieces. The top and sides form one piece, and the bottom the other. They are cemented in a steel channel around the deck cover opening in the body (Fig. 65).

The channel on the top of the deck cover opening is stamped into the roof panel, and into the rear deck center lower panel at the bottom. The channel is formed on the sides by flanges on the rear quarter side panels and rear fenders.

The flanges on the rear quarter side panels make up the bottom and inside flanges of the channel while the flanges of the fenders make up the outside of the channel.

69. COWL VENTILATOR

1949 "600" and "Ambassador 6" Series

The cowl ventilator serves as an intake for fresh air.

The volume of air entering the car through the cowl ventilator can be controlled by opening and closing the inside cowl ventilator cover (item 1, Fig. 69).

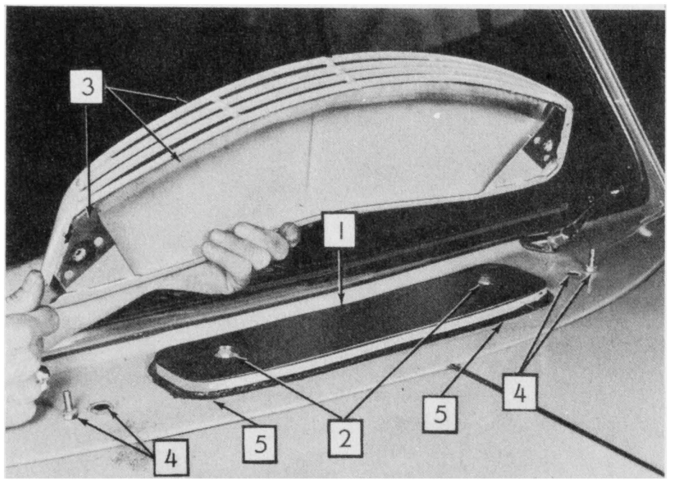
The inside cowl ventilator cover is molded rubber, steel reinforced. It is concealed under the cowl ventilator hood and screen assembly on the top of the cowl. It is fastened to the cowl ventilator handle assembly by two screws.

The screw holes in the cover are oversize. This permits adjustment of the cover to the ventilator opening to insure positive sealing when the cover is closed.

Cowl Ventilator Handle Assembly

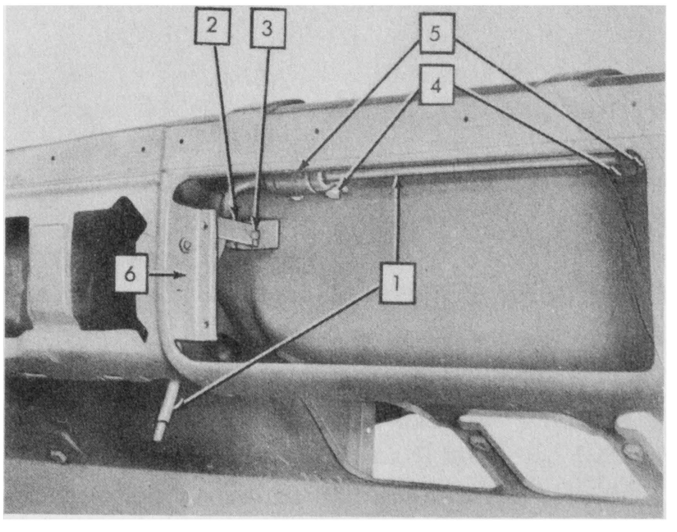
The cowl ventilator handle extends from below the instrument panel (Fig. 69-A). It has two brackets that extend through the dash top to which the cover is fastened (Fig. 69-A). It is held in place by two bushing caps and rubber sealer bushings that are screwed to the dash top. These also serve to seal the openings in the dash top through which the cover brackets are extended.

The ventilator handle bracket assembly (item 2, Fig. 69-A) has a friction clamp under spring ten-



1. Cowl ventilator cover (rubber)
2. Cowl ventilator cover screws
3. Cowl ventilator hood and screen assembly
4. Cowl ventilator hood fastening screws and holes in cowl top (Screws are inserted through holes in cowl top from inside, behind instrument panel)
5. Cowl ventilator drain trough

Figure 69—Cowl Ventilator.



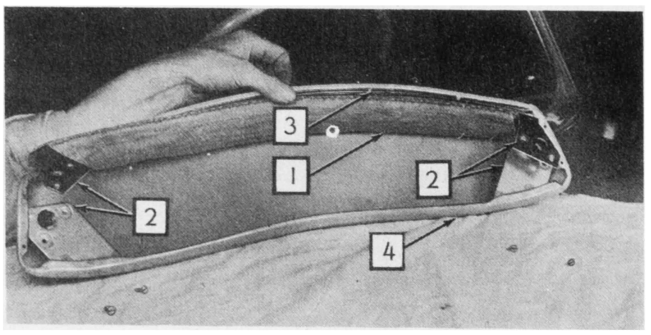
1. Cowl ventilator handle assembly
2. Cowl ventilator handle bracket assembly
3. Cowl ventilator handle bracket clamp clevis pin
4. Bushing cap and screws
5. Bushing (rubber)
6. Radio mounting flanges on instrument panel—left side of center opening

Figure 69-A—Cowl Ventilator Handle Assembly.

sion. This permits the cover to be locked in the full open or closed position, or held in any intermediate position. This bracket also serves as a brace from the instrument panel to the dash panel (item 2, Fig. 69-A).

Cowl Ventilator Hood Assembly

The cowl ventilator hood assembly has two units, of which the hood and grille are one unit, and the ventilator screen the other. The screen is fastened in the hood by retainer clips along the front edge, and by two screws at each end. This allows easy removal of the screen for cleaning and replacement if necessary (Fig. 69-B).



1. Screen assembly
2. Screen fastening plate on screen assembly
3. Retainer clips on hood assembly
4. Hood

Figure 69-B—Removing Cowl Ventilator Screen Assembly from Hood.

The hood assembly is fastened to the cowl top by two cap screws. These are inserted (from inside, behind the instrument panel) through cutouts in the dash top and holes in the cowl top. See Figure 69.

Cowl Ventilator Hood Removal Procedure

1. Remove Weather Eye heat deflector (item 2, Fig. 68).
2. Remove two cap screws holding hood to cowl top. Lift hood from cowl top.
3. Screen assembly can be removed from the hood for cleaning or replacement (Fig. 69-B).
4. Cowl ventilator drain trough can be cleaned if clogged (item 5, Fig. 69).

Cowl Ventilator Cover Removal or Adjustment Procedure

1. Remove cowl ventilator hood assembly.
2. Remove two screws holding rubber cover to ventilator handle and brackets assembly.

Cowl Ventilator Handle Assembly Removal Procedure

1. Remove cowl ventilator cover.
2. Remove radio.
3. Remove ventilator handle assembly (item 2, Fig. 69-A) or remove cotter pin, washer, spring, clevis pin and clamp (item 3, Fig. 69-A).
4. Remove bushing caps holding handle to dash top (item 4, Fig. 69-A).
5. Remove rubber bushing (item 5, Fig. 69-A).
6. Remove ventilator handle (item 1, Fig. 69-A).

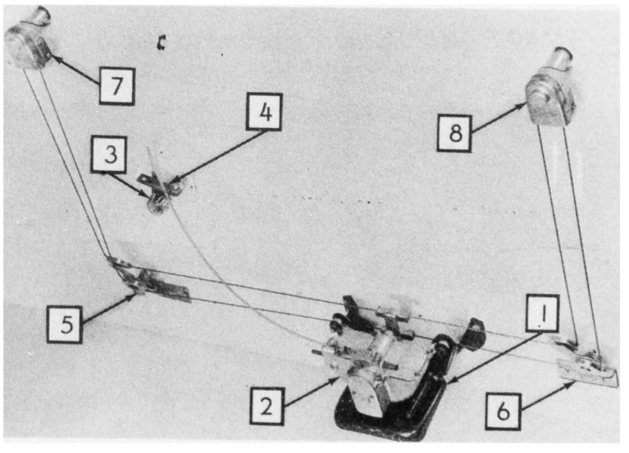
To Install, Reverse Removal Procedures

Lubrication

Apply Lubriplate to ventilator handle at bracket and clamp clevis pin (item 3, Fig. 69-A).

Apply graphite on handle and rubber bushing (items 4 and 5, Fig. 69-A).

70. WINDSHIELD WIPER

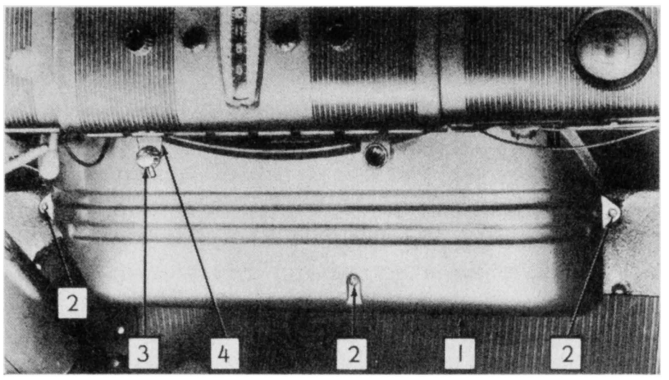


1. Motor mounting bracket
2. Motor
3. Control
4. Control mounting bracket
5. Cable tensioner—left
6. Cable tensioner—right
7. Pivot shaft body—left
8. Pivot shaft body—right

Figure 70—Diagram of Windshield Wiper Layout Inside of Body.

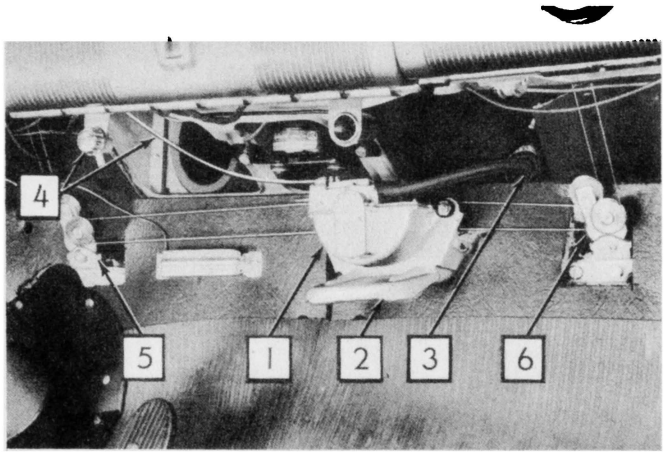
All of the windshield wiper parts inside the body, except the pivot shaft body and cable assemblies,

are accessible for service by removing the Weather Eye heat deflector (Figs. 70-A and 70-B).



1. Weather Eye heat deflector
2. Screws, deflector to dash panel (3)
3. Windshield wiper control
4. Control bracket

Figure 70-A—Weather Eye Heat Deflector.

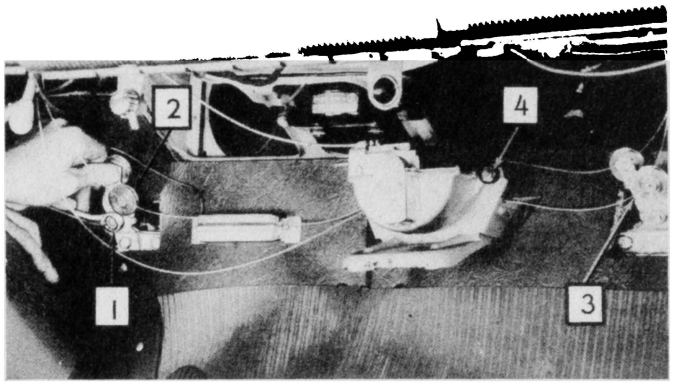


1. Motor
2. Motor mounting bracket (welded to dash panel)
3. Vacuum hose
4. Wiper control
5. Cable tensioner—left
6. Cable tensioner—right

Figure 70-B—Windshield Wiper Parts Exposed after Heat Deflector Is Removed.

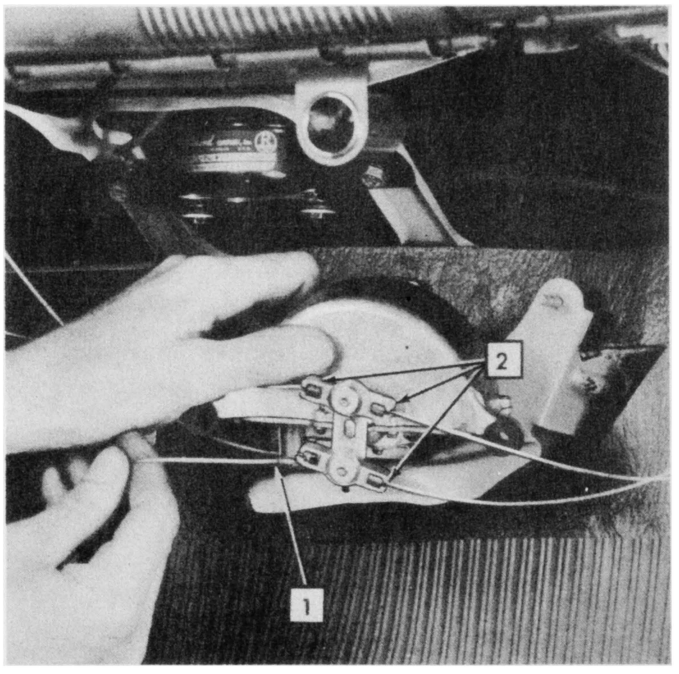
All cables must be loose before any parts of the wiper assembly can be removed. This is accomplished by loosening the lock nut on the tensioners. Then push the tensioners toward the wiper motor while removing the cables from the pulley (Fig. 70-C).

Remove the motor from the bracket by removing the mounting nuts. Turn the motor over, exposing the slots of the cables, for removal of the cable ends (Fig. 70-D).



1. Cable tensioner lock nut loosened
2. Tensioner pulley, pushed toward wiper motor to remove cables from pulley
3. Cables removed from pulley
4. Motor mounting nuts

Figure 70-C—Removing Cables from Cable Tensioner.

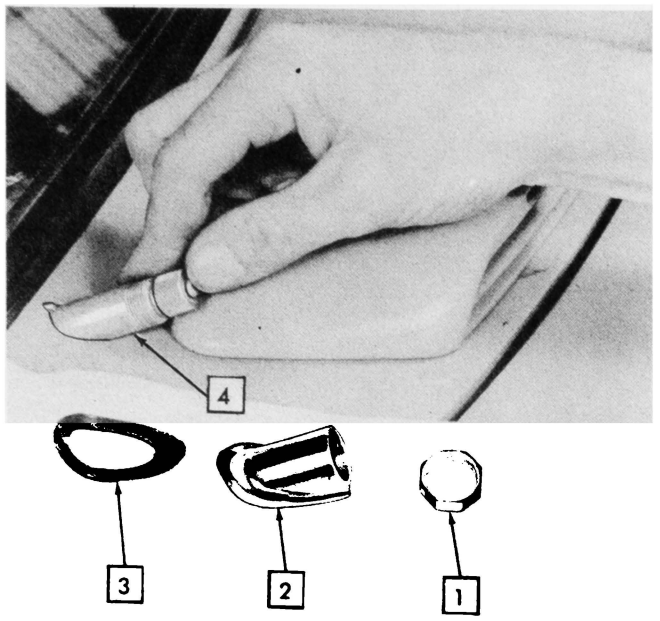


1. Cable end removed from motor
2. Cable ends properly installed to motor

Figure 70-D—Removing Cables from Wiper Motor.

The windshield wiper shaft and the windshield wiper pivot shaft body and cable assemblies are extended through the cowl top from the inside of the body (Fig. 70-F). They are sealed, spaced and tightened on the outside with a leather washer, chrome plated spacer and holding nut. The wiper arms and blades are installed from the outside (Fig. 70-E).

To remove the right or left windshield wiper pivot shaft body and cables from the car, the wiper



1. Pivot shaft nut
2. Pivot shaft spacer
3. Pivot shaft spacer leather washer
4. Pivot shaft body and cables

Figure 70-E—Removing Windshield Wiper Pivot Shaft Body and Cables, Holding Nut, Spacer and Washer.

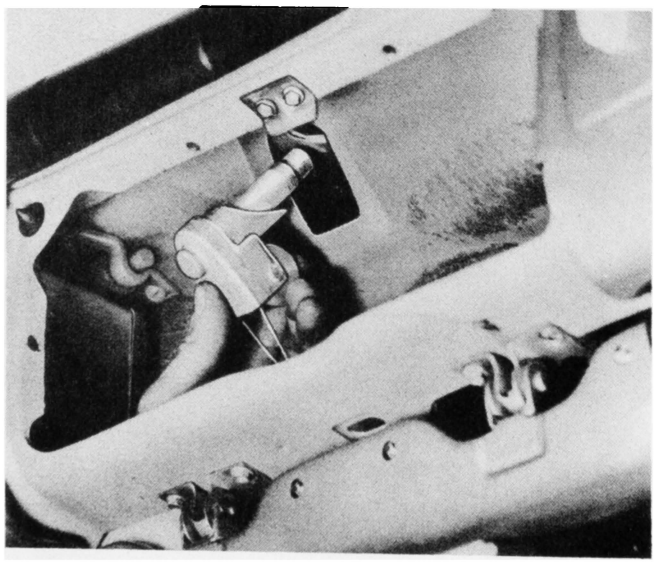


Figure 70-F—Removing Right Windshield Wiper Pivot Shaft Body and Cables from Opening in Dash and Cowl Top, After Glove Box Has Been Removed.

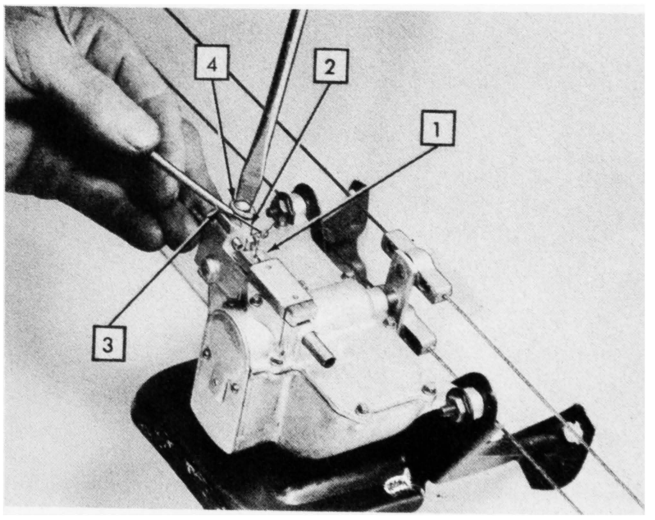
blade, arm, nut, spacer, and washer have to be removed from the shaft.

On the right side it will also be necessary to remove the glove box. See Figure 70-F. On the left side, it will be necessary to remove the left side instrument panel overlay and disconnect the defroster hose from the defroster nozzle (Subject 47).

It is not necessary to remove the windshield wiper control from the instrument panel for removal of the other wiper parts.

CAUTION: *It is necessary to remove the cable and conduit from the wiper motor.*

The cable end has a small flat washer which is set into a slot in the motor valve control. This is held in place by a screw and flat washer which tightens the conduit into a locking channel of the motor frame (Fig. 70-G). This fastening of the conduit holds the cable in place, yet allows it to work freely in the conduit when the control knob is operated. The motor valve is open when the control knob is turned to the right and closed when it is turned to the left.



1. Motor control valve
2. Control cable
3. Cable conduit
4. Cable conduit lock screw and washer

Figure 70-G—Removing Wiper Control Cable from Motor and Valve.

The control cable should be set into the motor valve control when the control knob is in the closed or off position. The conduit should be moved until the letter "W" on the control knob is in the upright position before the lock screw is tightened.

A by-pass is built into the motor unit, permitting vacuum to enter into an outlet on the left side of the motor for connection to a windshield washer, if the car is so equipped. The washer is controlled by the wiper control knob and cable. When the control knob is turned to the left, the cable pulls the valve on the motor to the left and allows

vacuum to pass to the windshield washer. The valve on the motor is under spring tension and must be held in this position until sufficient solution is sprayed on the glass, then the knob must be turned to the right as far as possible to operate the wiper.

The "W" on the control knob is set upright when the motor is off or in the neutral position. The "W" is horizontal to the right when the wiper is on. The "W" is horizontal to the left when the washer is on.

Windshield Wiper Motor Removal Procedure

1. Remove Weather Eye heat deflector (Fig. 70-A).
2. Loosen lock nut on cable tensioners, removing cables from pulleys (Fig. 70-C).
3. Remove two screws holding motor to mounting bracket (Fig. 70-C).
4. Turn motor over and remove cables from motor (Fig. 70-D).
5. Disconnect control cable from motor (Fig. 70-G).

Right Pivot Shaft Body and Cables Removal Procedure—After Wiper Motor Removal

1. Remove glove box (Subject 50).
2. Remove wiper arm and blade.
3. Remove nut, spacer, and washer (Fig. 70-E).
4. Remove pivot shaft body and cables (Fig. 70-F).

Left Pivot Shaft Body and Cables Removal Procedure—After Wiper Motor Removal

1. Remove left side instrument panel overlay (Subject 47), and disconnect defroster hose from nozzle.
2. Remove wiper arm and blade.
3. Remove nut, spacer and washer (Fig. 70-E).
4. Remove pivot shaft, body, and cables (Fig. 70-F).

Left or Right Cable Tensioner Removal Procedure—After Removal of Heat Deflector

1. Loosen lock nut on tensioner. Remove cables from pulleys (Fig. 70-C).
2. Remove two screws holding tensioner to dash (Fig. 70-C).

Windshield Wiper Control Removal Procedure

1. Remove Weather Eye heat deflector (Fig. 70-A).
2. Disconnect cable control from motor (Fig. 70-G).
3. Remove control knob and nut. Lift control from bracket on instrument panel.

To Install, Reverse Removal Procedure In All Cases

Alignment and Hook up of Pivot Shaft Cables to Motor

NOTE: *The left pivot shaft cables are longer than those on the right (Fig. 70). The outside cable on the left pivot shaft is on the top pulley of the left tensioner. This is hooked to the top motor shaft connection. The inside cable on the right pivot shaft is on the top pulley of the right tensioner. This is hooked to the top motor shaft connection with the outside cable of the left pivot shaft. The other cables are on the bottom pulleys and are hooked to the bottom connection of the motor shaft.*

Setting Tensioners to Tighten Cables

The tensioners are pushed away from the motor until the cables are tight, then the tensioner lock nut is tightened.

CAUTION: *See that cables are free from contact with any other metal surface.*

71. DOME LIGHT

1949 "600" and "Ambassador 6" Series

The dome light consists of two assemblies, the light base and the lens.

The light base assembly, consists of the base reflector and bulb socket. The lens assembly consists of the glass lens mounted into a chrome frame.

The lens chrome frame has four prongs on the inner flange. These prongs fit over four convex projections in the base under spring tension which holds the lens to the base.

Removal Procedure

Insert a putty knife between head-lining and lens chrome frame about one-half inch, then pry frame and glass down and out of the base (Fig. 71).

NOTE: *Do not remove glass lens from chrome frame.*

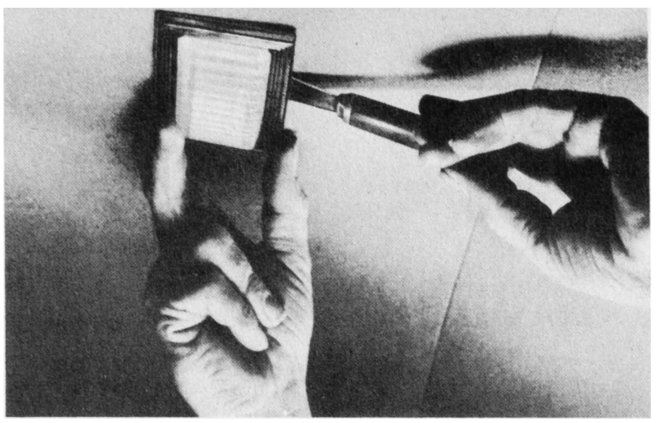


Figure 71—Removing Dome Light Lens.

72. FRONT SEAT FRAME—4 DOOR SEDANS

1949 "600" and "Ambassador 6" Series

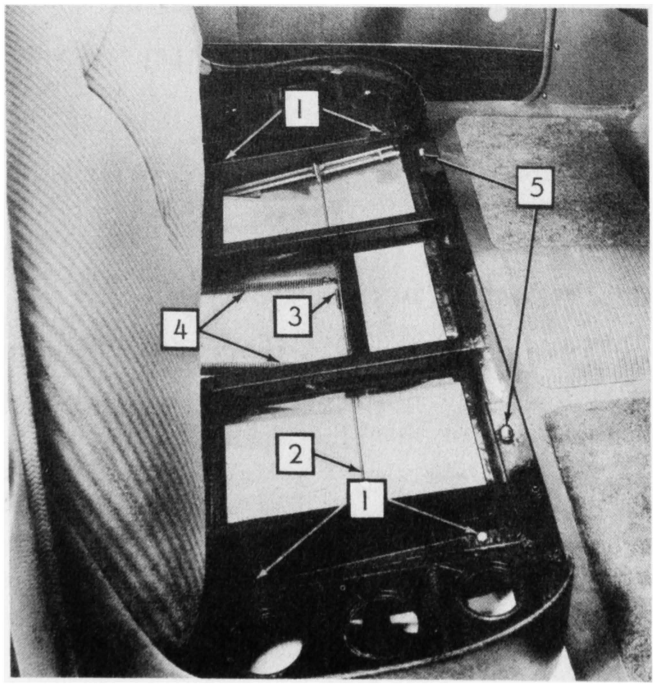
The front seat frame includes the seat back, base, and built-in footrest for the rear seat passengers. These are all welded together, forming a complete unit. The base is bolted to the seat adjuster slides and serves as a foundation for the front seat cushion.

NOTE: *In some models the back of the seat back frame is recessed to form a pocket the full width of the seat. When parts are ordered for seat backs with pockets, this should be noted to obtain the proper parts.*

Removal Procedure

1. Move seat to full forward position.
2. Remove seat cushion.
3. Lift latch wire from support on seat (item 3, Fig. 72).
4. With socket wrench, remove two nuts holding seat frame to seat adjuster slides.
5. Raise seat up from seat adjusters and tilt back to unhook springs from seat base or floor.

To Install, Reverse Removal Procedure



1. Seat frame to adjuster nuts
2. Latch wire
3. Latch wire support (on seat)
4. Springs
5. Cushion stop

Figure 72—Front Seat Removal.

73. FRONT SEAT FRAME—ALL BROUGHAMS AND SEDANS WITH FOLDING SEAT BACKS

1949 "600" and "Ambassador 6" Series

The front seat frame includes the seat base and built-in footrest for the rear seat passengers. These are welded together to form a complete unit. The front seat frame is bolted to the seat adjuster slides and also serves as a foundation for the front seat cushion.

The right and left folding seat backs are mounted to the seat base sides and center brackets. They can be removed from the seat base for service.

74. FRONT SEAT ADJUSTER—ALL MODELS

1949 "600" and "Ambassador 6" Series

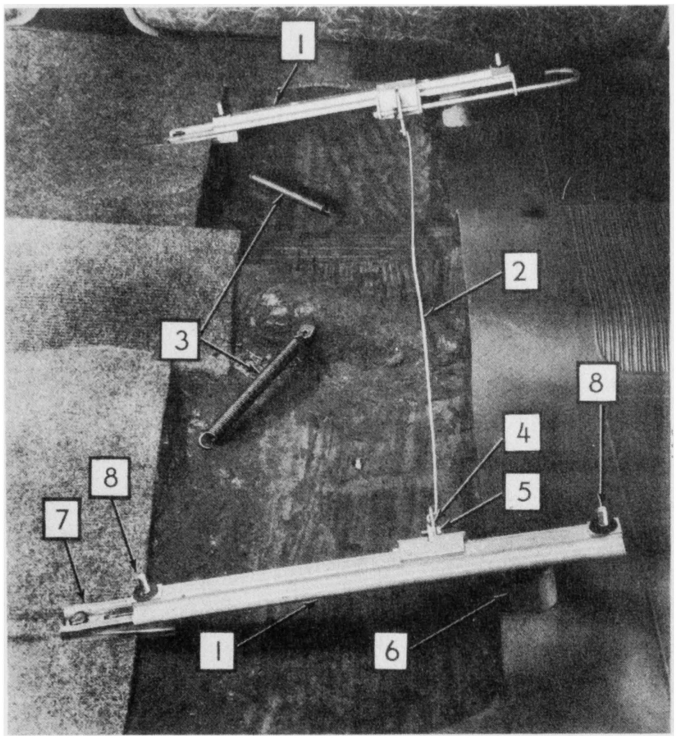
The front seat adjuster slides have two pieces of channel steel specially formed to provide a race for ball bearings. The top channel is flanged over the bottom to form the union of the two channels, with the ball bearings between them. Sufficient compression is created on the ball bearings to produce constant tension, yet permitting the channels to operate in a sliding action on the ball bearings.

Each adjuster slide has its own latch. The seat may be locked on both sides in the full back posi-

tion and about every half-inch to the full forward position—a distance of about four inches.

The control handle for releasing the seat latch is on the left adjuster slide. It is connected to the right adjuster slide latch by a latch wire. When properly adjusted, the latches on both adjuster slides operate simultaneously, eliminating side movement of the seat.

Two coil springs are hooked from the body floor to the rear of the seat base to assist in the forward movement of the seat assembly. They also compensate for the natural lift of the seat as it is elevated in forward movement (Fig. 74).



1. Seat adjuster slide—right and left
2. Latch wire
3. Springs
4. Right seat adjuster slide latch (adjustable)
5. Latch lock screw
6. Seat adjuster spacer
7. Seat adjuster to floor screw
8. Fiber insulation washer

Figure 74—Front Seat Adjuster.

Removing Right or Left Adjuster Slides

Removal Procedure

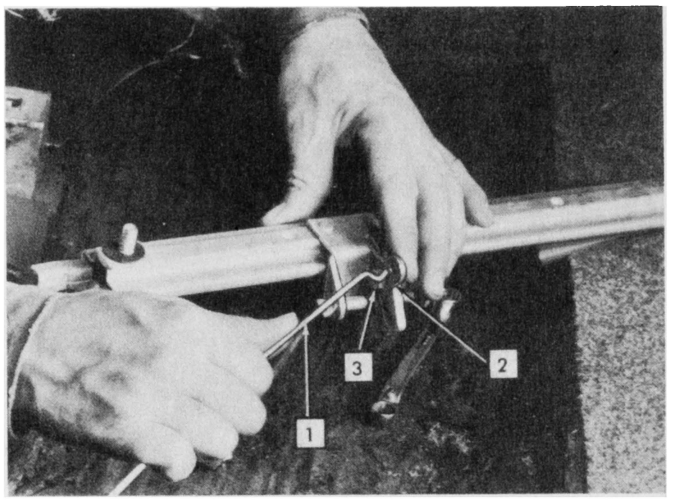
(After seat is removed from adjuster slides. See Figure 72.)

1. Remove rear adjuster slide to floor screw.
2. Slide adjuster to rear and remove front adjuster slide to floor spacer screw.
3. Turn adjuster slide sideways and remove latch wire end from adjuster slide latch.

NOTE: *Fiber washers or insulation pads are placed between the seat adjuster slides and the body floor, also between the seat adjuster slides and the bottom of the seat base. These are to prevent metal to metal contact and possible noise. If these should be misplaced, use cork tape as insulator.*

To Install Right Adjuster Slide

1. Turn adjuster slide sideways and install latch wire as shown in Figure 74-A.
2. Loosen latch screw (item 3, Fig. 74-A).



1. Latch wire
2. Latch
3. Latch lock screw

Figure 74-A—Installing Latch Wire in Latch Right Seat Adjuster Slide.

3. Install screws holding adjuster to floor.
4. Move both seat adjuster slides to the forward position with latch locked in place on each slide.
5. Push latch toward slide and tighten latch lock screw.
6. Operate handle (on left slide) to see if it will release latch on right slide. If not, make closer adjustment.
7. Install seat assembly (Subject 72).

Maintenance

The seat adjuster slides must be kept clean and lubricated for ease in adjusting the seat.

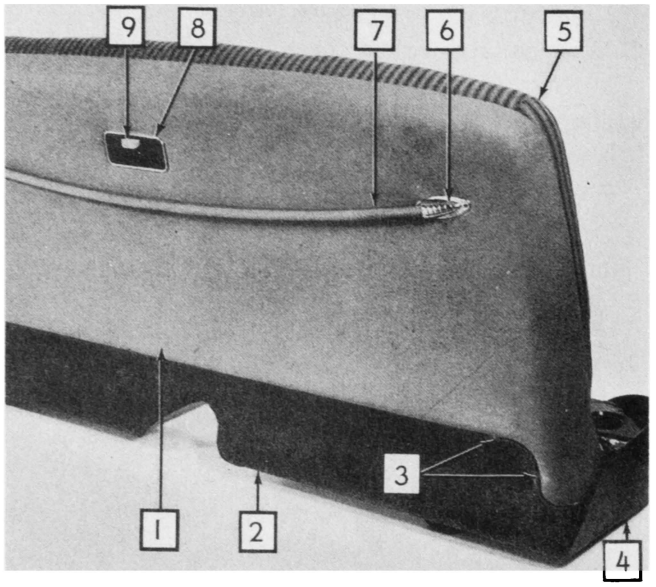
They are cleaned with gasoline, blown dry with air hose, and lubricated with Lubriplate, using a small brush.

75. FRONT SEAT BACK UPHOLSTERY, SPRINGS, KICK PAD AND TRIM PARTS

1949 "600" and "Ambassador 6" Series

The upholstery on the *back of the front seat back* is referred to as the Front Seat Kick Pad (Figs. 75 and 75-A).

The upholstery on the *front of the front seat back* is referred to as Front Seat Back Upholstery (Fig. 75-F).

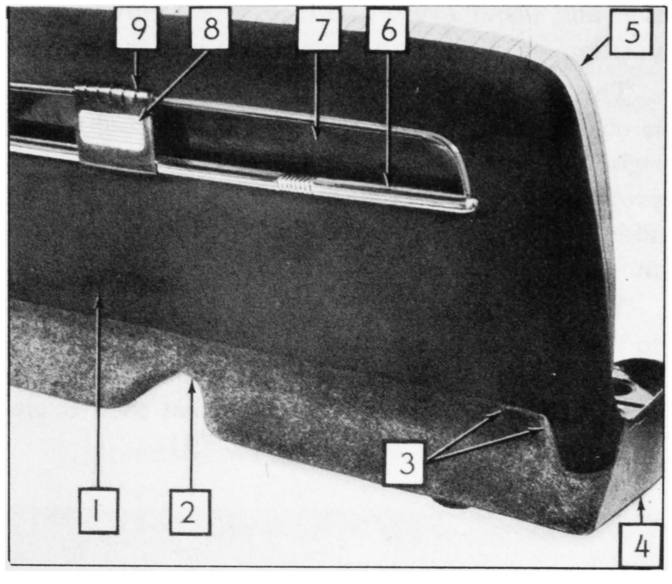


1. Kick pad
2. Toe carpet
3. Drive nails
4. Side wing
5. Front seat back upholstery and spring assembly
6. Robe cord end
7. Robe cord
8. Ash receiver retainer
9. Ash receiver

Figure 75—Front Seat Back (Back of Back).

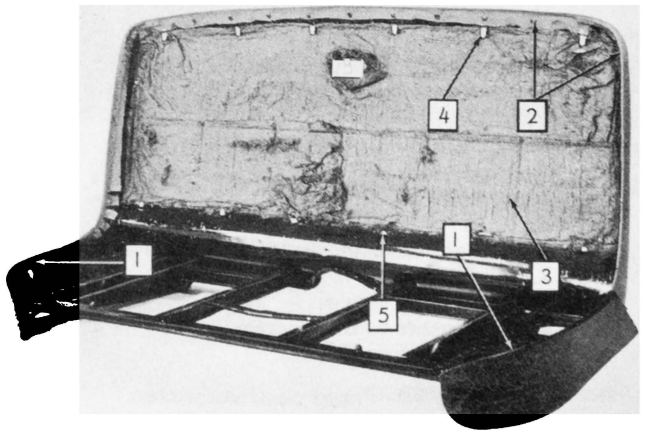
The bottom of the kick pad is clipped to the bottom of the front seat. This is covered by the top of the toe carpet, which is cemented and nailed to the foot rest. The lower side of the kick pad is clipped to the seat side and covered by the side wing, which is screwed to the seat side. The top of the kick pad upholstery is clipped to the top of the seat back and tacked along the sides (Fig. 75-B).

Upon the front seat frame assembly are mounted the kick pad, toe carpet, side wings and hardware trim parts such as robe cord and ash receiver, or pocket trim parts (Fig. 75-C).



1. Kick pad
2. Toe carpet
3. Drive nails
4. Side wing
5. Front seat back upholstery and spring assembly
6. Trim bar—right
7. Trim panel—right
8. Ash receiver
9. Ash receiver retainer

Figure 75-A—Front Seat Back With Trim Panel. (Back of Back).



1. Upholstered side wings
2. Kick pad upholstery (clipped to top and tacked to sides of seat back)
3. Spring padding
4. Clips for holding spring assembly at top
5. Clips for holding spring assembly at bottom

Figure 75-B—Front Seat Frame with Kick Pad Upholstery, Upholstered Side Wings and Spring Padding Installed.

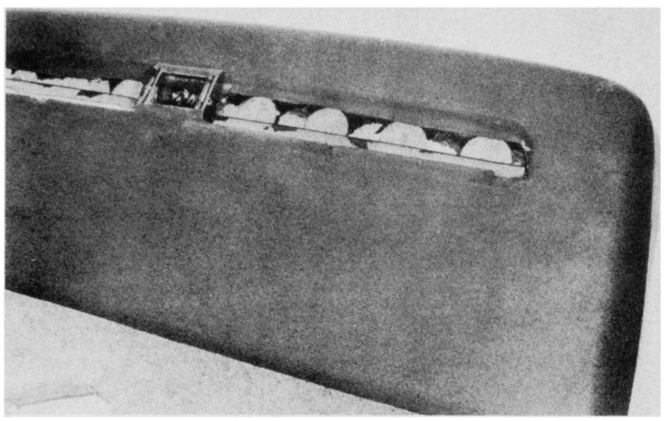


Figure 75-C—Front Seat Kick Pad Cut Out for Trim Parts.

Front Seat Back Trim Parts

The kick pad upholstery is cut out for the ash receiver and trim parts which are fastened to the seat back frame (Figs. 75-C and 75-D).

Front Seat Back Upholstery and Springs

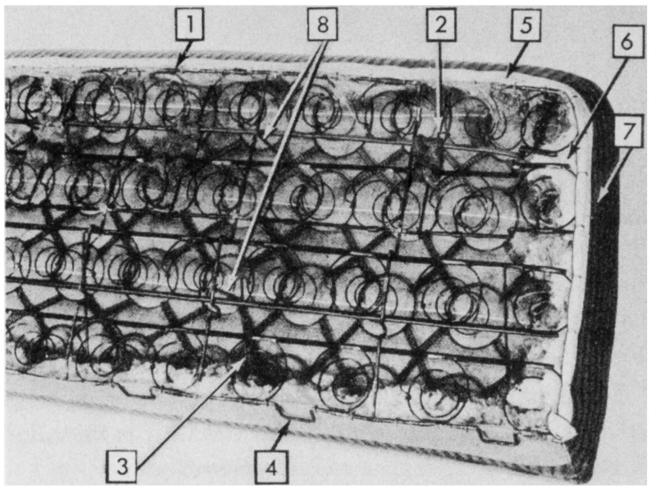
The front seat back upholstery and spring assembly consists of springs, spring pad, cotton topper pad and upholstery (Fig. 75-E).

The cotton spring pad (item 5) is sewed to a burlap base and hog-ringed to the spring border wire.

The cotton topper (item 6) is a heavy pad of soft cotton. This is placed over the spring pad with a cloth covering and stitched to the spring pad. Then it is hog-ringed to the spring border wire.

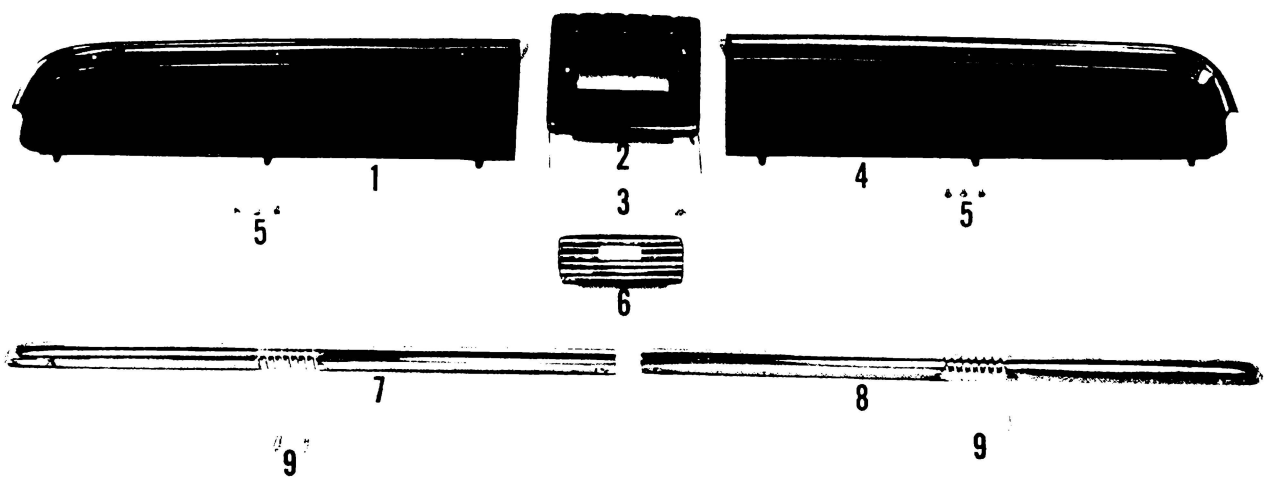
The upholstery (item 7) has a facing sewed to top, bottom and sides, which is hog-ringed to the spring border wire.

The upholstery buttons and attaching ties (item 8) are inserted through the upholstery pads and springs, then looped over the spring frame and hog-ringed (Figs. 75-F and 75-G).



1. Spring border wire
2. Diagonal brace wire—upper (4)
3. Diagonal brace wire—lower (5)
4. Loop in border wire for clipping springs to bottom seat frame
5. Spring pad sewed to burlap base and hog-ringed
6. Cotton topper pad
7. Upholstery hog-ringed to spring border wire
8. Button cords hog-ringed to side frame

Figure 75-E—Front Seat Back Upholstery and Springs.



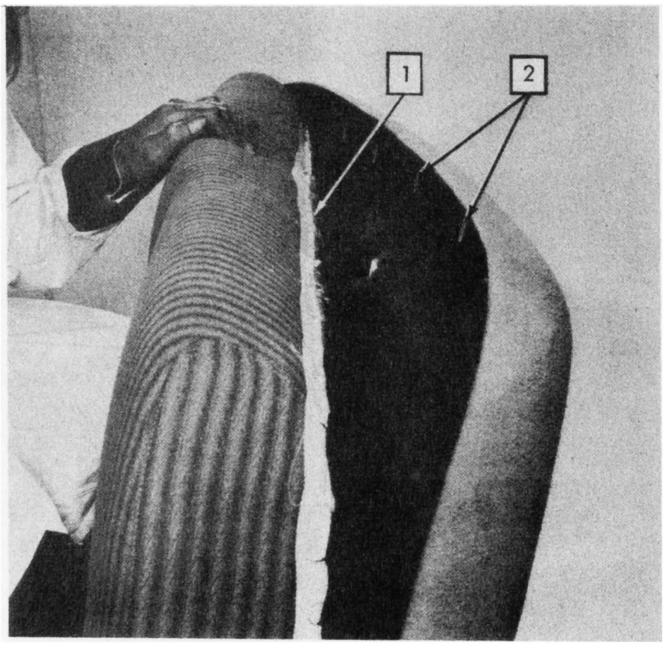
1. Trim panel—left
2. Ash receiver retainer
3. Ash receiver retainer screws
4. Trim panel—right
5. Trim panel screws
6. Ash receiver assembly
7. Trim bar—left
8. Trim bar—right
9. Trim bar screws

Figure 75-D—Front Seat Back Trim Parts.

This complete assembly is installed into the front seat frame assembly as one unit. The front seat frame assembly has spring retaining clips at the top and bottom (Fig. 75-B).

The spring top border wire (item 1) is inserted under the top clips of the seat frame (Fig. 75-F). The bottom clips of the front seat frame are clinched over the spring bottom border wire loops (item 4, Fig. 75-E). This holds the seat back upholstery and spring assembly to the front seat back (Fig. 75-G).

The front seat back upholstery pads and springs are assembled as one unit. Then the unit is installed on the front seat frame as an assembly.



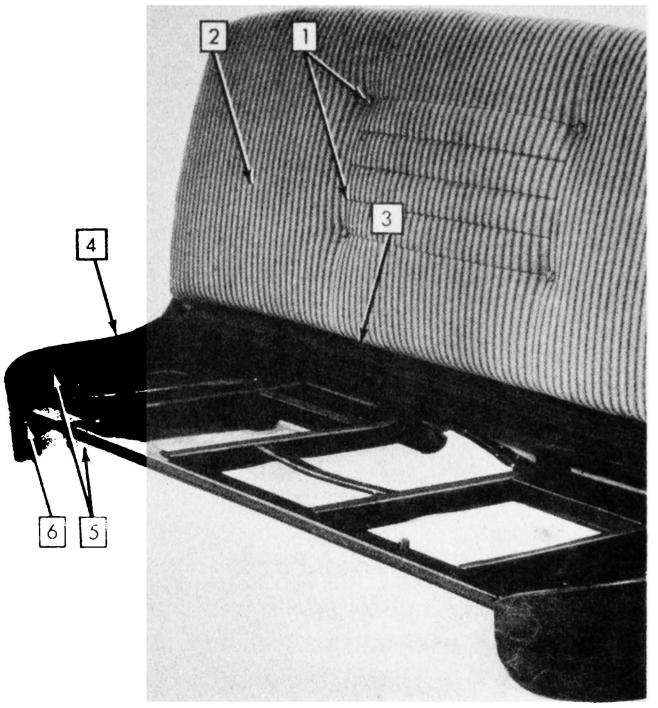
1. Spring top border wire
2. Top clips on seat frame

Figure 75-F—Installing Front Seat Back Upholstery and Spring Assembly in Seat Frame by Hooking Spring Top Border Wire under Top Clips.

No. 1—Front Seat Back Upholstery and Spring Assembly

Removal Procedure

1. Remove front seat cushion.
2. Loosen clips holding bottom border wire (item 3, Fig. 75-G).
3. Pull bottom of upholstery and spring assembly from seat frame and push down, releasing top border wire from top clips (Fig. 75-F). If the top clips are bent out, they should be straightened to hold the springs when they are reinstalled.



1. Buttons and cords
2. Seat back upholstery and spring assembly
3. Clips holding spring assembly at bottom of seat frame
4. Side wing
5. Side wing clip
6. Side wing screw

Figure 75-G—Front Seat Back (Front of Back).

No. 2—Front Seat Back Upholstery

Removal Procedure—After Removal Procedure No. 1

1. Cut and remove hog rings holding upholstery facing to spring border wire (item 7, Fig. 75-E).

No. 3—Front Seat Back Spring

Removal Procedure—After Removal Procedures No. 1 and No. 2

1. Cut and remove hog rings holding burlap spring pad base to spring border wire (item 5, Fig. 75-E).

To Install, Reverse Removal Procedure

No. 4—Front Seat Side Wing Upholstery

Removal Procedure

1. Remove front seat cushion.
2. Remove screw at front of side wing to seat frame (item 6, Fig. 75-G). Bend bottom clips down and slide side wing assembly forward from seat frame side.
3. Remove upholstery from side wing panel.

To Install

4. Cement upholstery to side wing panel (use trim cement). Slide wing on seat frame side. Install screw at front and tighten all clips.

No. 5—Front Seat Kickpad

Removal Procedure—No. 5, after Removal Procedures No. 1 and No. 4, Both Sides.

1. Remove trim parts from front seat back (Figs. 75 and 75-A).
2. Loosen top of toe carpet (Figs. 75 and 75-A) and unhook upholstery from clips.
3. Remove tacks on sides and unhook upholstery from clips on top of seat back frame (Fig. 75-B).

No. 6—Front Seat Back Toe Carpet

Removal Procedure—No. 6

1. Remove front seat cushion.
2. Remove front seat assembly from seat adjusters (Subject 72).
3. Tilt seat back forward. Remove drive nails from top of toe carpet and open channel at bottom, releasing carpet. (The carpet is cemented to the foot rest panel with trim cement.)

To Install, Reverse Removal Procedure

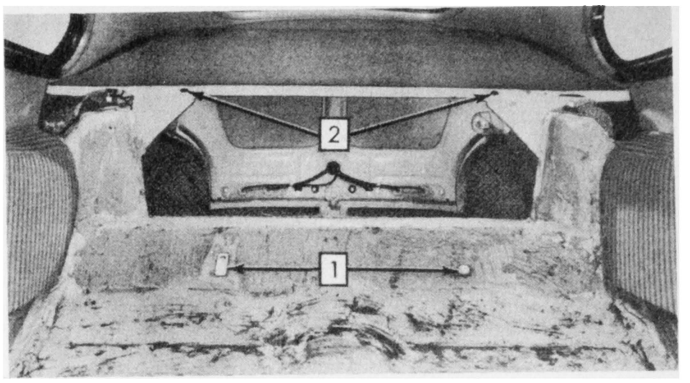
76. REAR SEAT BACK

1949 "600" and "Ambassador 6" Series

The rear seat back assembly consists of spring, spring pad, cotton topper pad and upholstery on the front of the spring. The rear of the spring is covered with a printed insulation pad which is exposed to the trunk compartment. The rear of the spring is also upholstered with a trim panel across the back of the seat above the rear window shelf.

The rear seat back springs are provided with a "U" steel channel. Pressed paper crimped into this channel serves as a tacking rail for the top and upper half of the sides. The lower half of the sides and bottom have a round spring border wire for hog-ringing this portion of the upholstery and back insulation pad.

The bottom border wire of the spring assembly is clipped to the body floor. There are two studs on the seat back spring which are inserted through holes in the flange of the rear window shelf. Lock washers and nuts are installed on these studs from the trunk compartment.



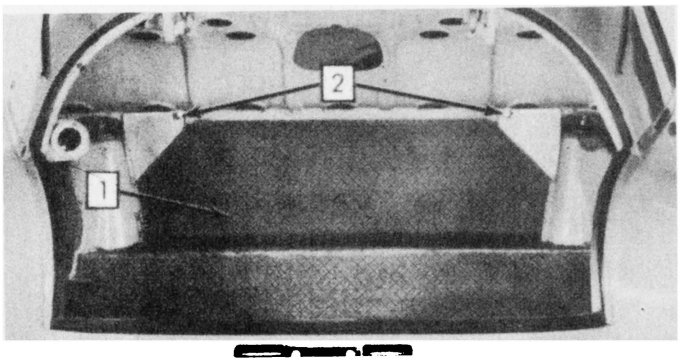
1. Clips on body floor
2. Holes in flange of rear window shelf panel

Figure 76—Rear Seat Back Fastening Clips on Body Floor and Holes in Flange of Rear Shelf for Fastening Studs on Seat Back Spring Assembly.

No. 1—Rear Seat Back and Spring Assembly

Removal Procedure—No. 1

1. Remove nuts and lock washers through trunk compartment (Fig. 76-A).



1. Rear seat back assembly
2. Studs from seat back

Figure 76-A—Rear Seat Back Assembly Bolted to Flange on Rear Window Shelf in Trunk Compartment.

2. Remove rear seat cushion from inside body.
3. Pull top of seat back from rear window shelf until studs are released.
4. Lift seat back upward, releasing seat back from clips at bottom.

To Install, Reverse Removal Procedure

No. 2—Rear Seat Back Upholstery

Removal Procedure—No. 2, After No. 1

1. Remove trim panel tacked to top on back of seat.

2. Remove printed insulation pad. (Cut hog rings and remove tacks.)
3. Remove upholstery. (Cut hog rings and remove tacks.)

No. 3—Rear Seat Back Springs

Removal Procedure No. 3, After No. 1 and No. 2

1. Remove combination spring and topper pad. (Cut hog rings and remove tacks.)

77. SEAT CUSHIONS

1949 "600" and "Ambassador 6" Series

In production three different types of springs and two different types of pads are used. All springs, however, are provided with a spring grille pad.

Types of Springs

Conventional springs have four rows of coils.

Semi-Luxury springs have five rows of coils, with the second and third rows encased.

Full Luxury, or heavy duty, springs have six rows of coils, with all coils encased.

Types of Pads

The cotton pads are a combination of a spring pad and a cotton topper pad stitched together. The spring pad has a burlap base and the topper pad has a cloth covering. The two pads, being stitched together and hog-ringed to the spring border wire, provide a good base and a smooth surface for the upholstery.

The latex foam pads have a cloth pad skirt for tacking to the spring tacking rail (Fig. 77).

No. 1—Seat Cushion Upholstery

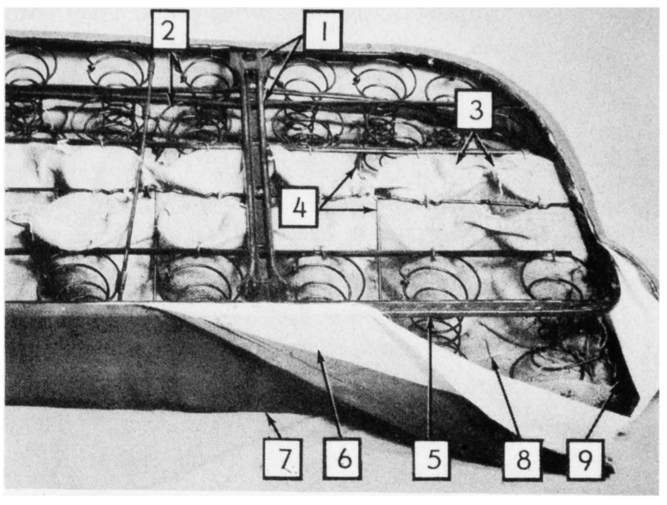
Removal Procedure

1. Remove cushion from car and place on clean cloth or bench.
2. Remove tacks holding upholstery to tacking rail.
3. Remove buttons, if so equipped.

No. 2—Cushion Spring

Removal Procedure—After Removal Procedure No. 1

1. Remove tacks from pad skirt.
2. Cut hog rings and remove spring border wire pad.
3. Cut hog rings and remove spring pad grille.



1. Cushion support and stop
2. Conventional coils
3. Semi-Luxury encased coils
4. Diagonal brace wire
5. Tacking rail
6. Pad skirt (foam pad)
7. Cushion facing
8. Pad grille
9. Spring border wire

Figure 77—Removing and Installing Front Seat Cushion Upholstery.

To Install, Reverse Removal Procedure

NOTE: *When installing new springs, inspect and tighten all coil and diagonal brace wire clips. If necessary, install "C" clips over diagonal brace wire ends and border wires.*

Rough handling of springs in shipment for service replacement often loosens the clips, causing failure.

Front Seat Cushion

The front seat cushion should be set on the seat back base, then pushed back into place by applying pressure on the bottom tacking rail.

CAUTION: *Do not apply pressure or pound on the top front border. This will loosen the diagonal brace wire anchorage, causing the front edge to collapse and the end of the diagonal brace wire to damage the pad and upholstery.*

Rear Seat Cushion

Place the cushion stops on the inside edge of the cushion support, then push the back of the cushion down against the seat. (See caution above.)

78. REPLACING DAMAGED UPHOLSTERY BY SECTIONS

1949 "600" and "Ambassador 6" Series

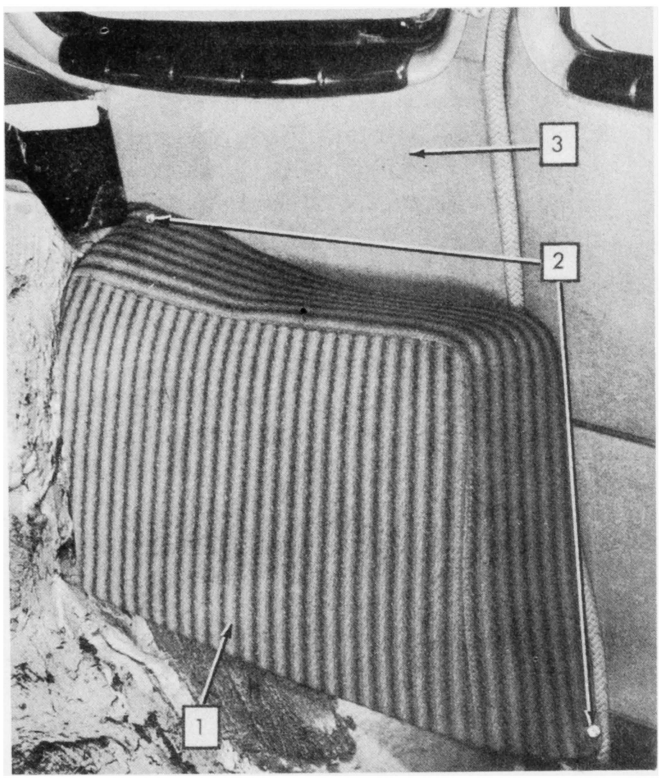
Torn, burned or stained upholstery on seat cushions and backs, may be repaired by replacing the section of upholstery damaged and not the complete new cushion and back upholstery.

The body section of the Parts Book lists the various sections of upholstery serviced.

Refer to ORDERING BODY PARTS, Subject No. 2.

79. REAR QUARTER SIDE ARM REST AND TRIM PANEL

1949 "600" and "Ambassador 6" Series



1. Side arm rest
2. Side arm rest screw
3. Trim panel

Figure 79—Rear Quarter Side Arm Rest and Trim Panel.

The rear quarter side arm rest is molded ragboard with a steel reinforcing plate. There are two prongs on the front edge of the arm rest which set into the rear quarter body pillar (Fig. 79-A). There are two more prongs at the rear lower portion of the arm rest. They support the arm rest on the rear quarter side panel.

Two screws, one at the upper rear corner and one at the lower front corner fasten the arm rest to the body (item 2, Fig. 79).

The rear quarter trim panel (item 3, Fig. 79) is separate from the arm rest and can be removed without removing the arm rest.

No. 1—Rear Quarter Side Arm Rest

Removal Procedure

1. Remove rear seat cushion.
2. Remove rear seat back (Subject 76).
3. Remove two screws holding arm rest to side quarter panel (item 2, Fig. 79).

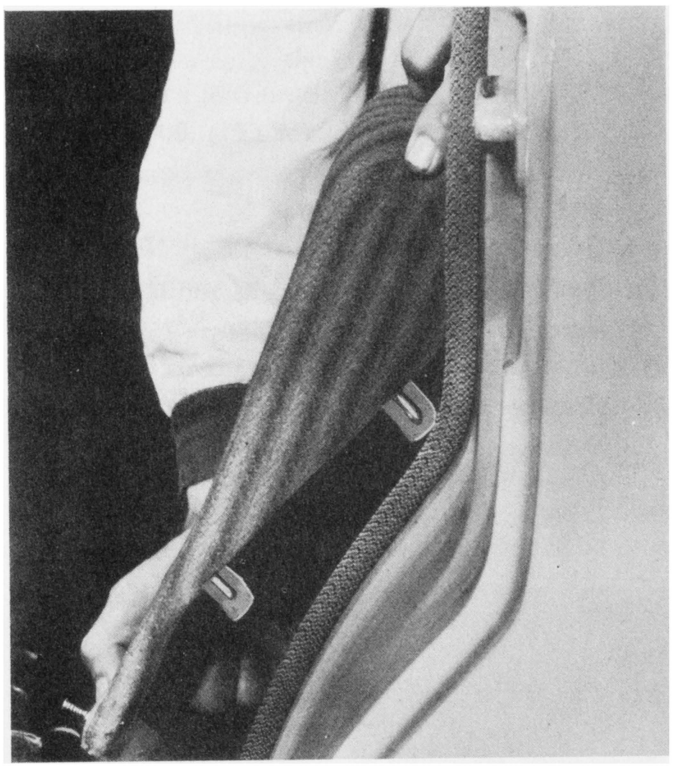


Figure 79-A—Removing Rear Quarter Side Arm Rest.

4. Pull lower front edge of arm rest away from rear quarter body pillar and raise up, releasing front clips. This movement lowers the back end, releasing the rear clip (Fig. 79-A).

No. 2—Trim Panel

Removal Procedure

1. Remove rear quarter ventilator assembly (Subject 33).
2. Remove rear seat back (Subject 76).
3. Remove upper rear screw arm rest to body (item 2, Fig. 79).

4. Lift trim panel up from arm rest.

To Install, Reverse Removal Procedure

No. 3—Rear Quarter Arm Rest and Trim Panel

Removal Procedure—After Removal Procedure No. 1

1. Remove rear quarter ventilator assembly (Subject 33).

80. HEADLINING

1949 "600" and "Ambassador 6" Series

No. 1—Removing Parts for Headlining Removal

Removal Procedure

1. Remove sun visors.
2. Remove rear view mirror (Fig. 80).
3. Remove instrument panel top overlay (Subject 46).
4. Remove defroster outlet caps.
5. Remove finish molding, right and left.
6. Remove rear quarter ventilators (Subject 33) or finish molding if on broughams.
7. Remove assist cords or hand ropes.
8. Remove dome and reading light lenses and bases (Subject 71).
9. Remove rear seat cushion.
10. Remove rear seat back (Subject 76).
11. Remove rear window finish molding.
12. Remove rear window shelf panel trim panel.

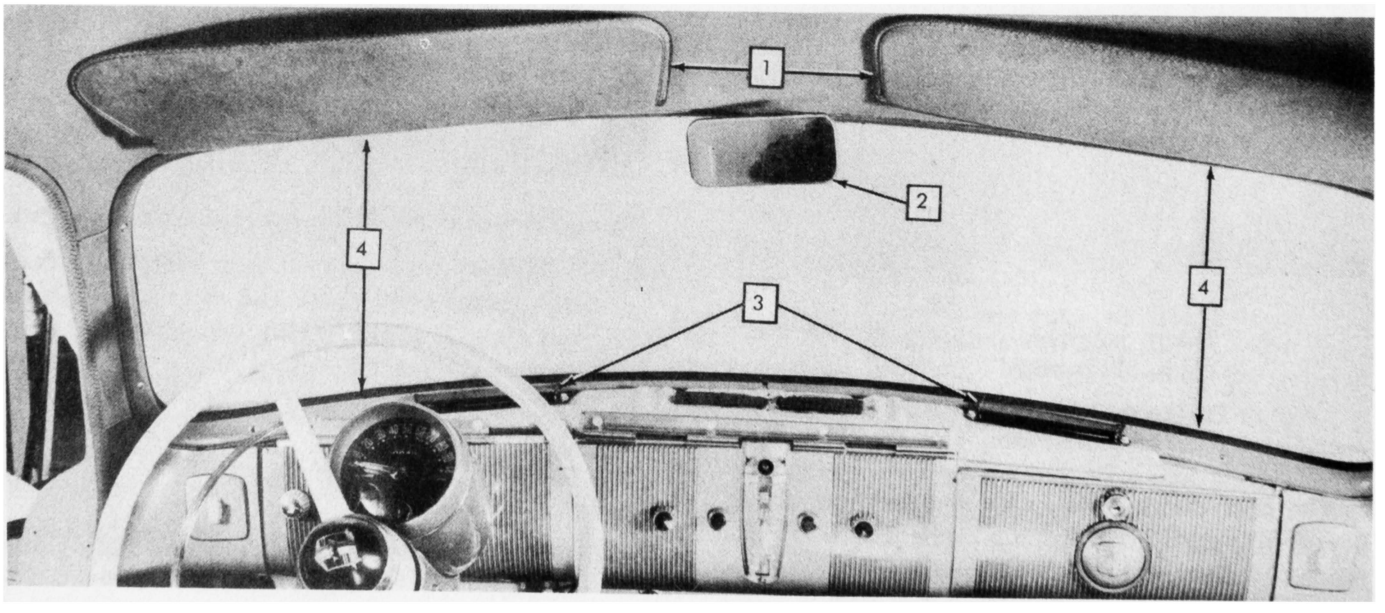
No. 2—Removing Headlining from Body

Removal Procedure

1. Pull headlining loose around windows where it is cemented. Remove tacks from headlining at shelf panel sides and under rear window.
2. Remove tacks from headlining at top of windshield.
3. Loosen headlining at front of retainer strip. With dull putty knife unhook the headlining from the saw teeth of the retainer strip as shown (Fig. 80-A).
4. With edges of headlining loose at front, rear, and both sides, push front headlining listing bow back. This will allow the arch to swing down. Now spring each end of listing bow from socket in body side roof rail, as shown in Figure 80-B. Follow the same procedure for each bow, removing headlining with bows remaining in listings.

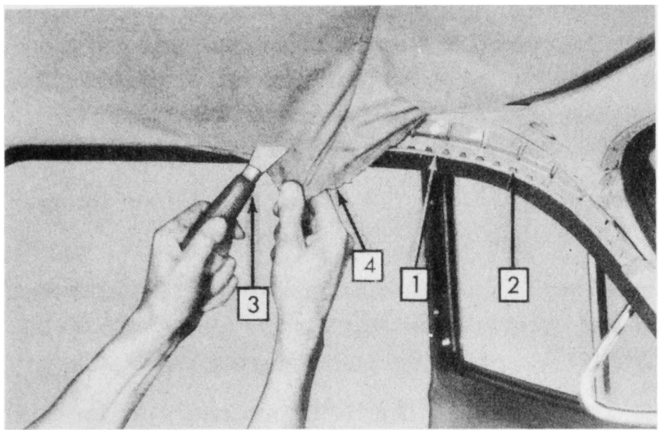
NOTE: *These bows are of different lengths and should be left in the headlining.*

If a new headlining is installed, the old headlining should be placed beside the new headlining and the bows transferred to their proper listings.



1. Sun visors, right and left
2. Rear view mirror
3. Defroster outlet caps
4. Finish molding

Figure 80—Parts to be Removed at Windshield for Headlining Removal.



1. Headlining retainer
2. Saw teeth on inside of retainer (next to body)
3. Lifting headlining off saw teeth of retainer
4. Pulling headlining down as it is released from saw teeth

Figure 80-A—Removing Headlining from Retainer.

No. 3—Installing Headlining in Body

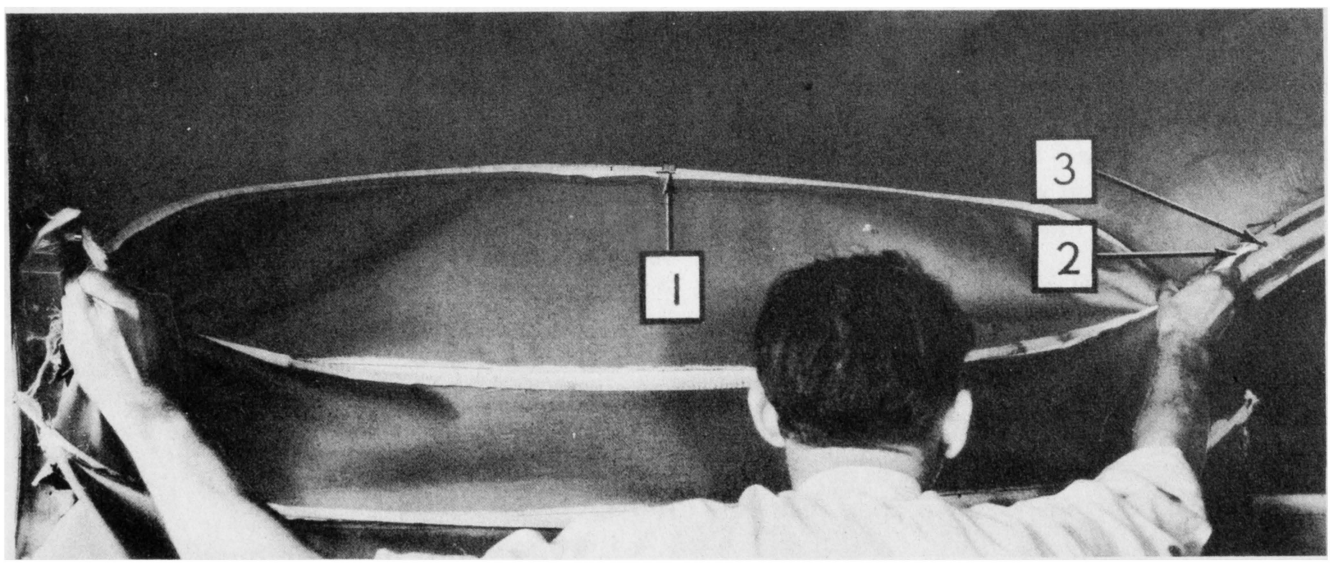
Installation Procedure

1. Before installing headlining, inspect sawtooth points of the headlining metal retaining strip. If bent, remove and straighten.
2. Start at rear of body with arch of bow down. Install ends of bow in sockets of side roof rail, swinging bow back and up against the roof. Now fasten bow into clip at top of dome light bracket (item 1, Fig. 80-B). Follow same procedure on remaining bows, spacing headlining evenly at each side while installing bows.
3. Spread rubber cement on ledge of rear window, and rear quarter windows, using an upholstery cement.
4. Stretch headlining forward, and tack it to windshield opening ledge.
5. At rear of body, stretch headlining, tacking below rear window at tacking strip on rear seat back shelf.
6. Cut rear window opening in headlining, and cement to rear window ledge and to rear quarter window ledges.
7. Stretch headlining lightly and force it under metal retaining strip with a dull putty knife, on each side of the body. Start at rear listing and work to front on each listing, then between listings.
8. Cut headlining opening for reading light, and install reading light base and lens.
9. **To Install Parts Removed, Reverse Removal Procedure No. 1.**
10. Brush and clean headlining.

82. CLEANING UPHOLSTERY

1949 "600" and "Ambassador 6" Series

There are a few items of a general nature to bear in mind when cleaning upholstery fabrics. On seat



1. Rear bow and listing fastening clip
2. Bow end and listing
3. Socket in main roof rail for bow

Figure 80-B—Removing and Installing Headlining Listing Bows at Side Roof Rails.

cushions and seat backs, do not saturate so that pads become wet.

In removing spots from a headlining, do not rub against the nap. Should this happen, smooth the material by rubbing with the nap while cloth is damp.

CAUTION: *Do not push headlining against the roof insulation, as this may further stain headlining.*

On upholstery which is backed with ragboard, be careful not to wet the cloth so that the ragboard stains trim material.

Type of Upholstery: When cleaning, removing spots, or renovating upholstery, it is necessary to know the type of fabric used. There are two types of upholstery used in automobiles—flat fabrics, which include broadcloth, whip cord and leather, and mohair fabrics, which are pile fabrics.

A flat fabric is one that is woven so that the fibres lie flat, the sides of the many fibres forming the wearing surface. A pile fabric is woven so that the fibres stand erect. These ends form the wearing surface of the material.

Removing Stains: The following suggestions will be helpful in removing stains.

NOTE: *When using cleaning fluids, always follow the procedure that is commonly used in cleaning clothes. Dampen a clean cloth with the fluid and start rubbing lightly around the OUTSIDE of the spot, gradually working to the center. This method keeps the spot from spreading and is less likely to leave a ring.*

Battery Acid: Pour household ammonia directly on the spot and allow it to remain for one minute. Rinse with cold water. It is essential that such treatment be applied at once, as the acid will eat the fabric within a few hours.

Grease and Oil Stains: Use Nash Fabric Cleaner. If the fabric is saturated with oil, pour cleaning fluid on the spot then soak it up by pressing a white blotter on the spot. Do this before cleaning with a cloth dampened with the cleaning fluid.

Blood Stains: Use cold water. If this does not remove the entire stain, pour ammonia on spot, then rub with a clean cloth.

NOTE: *Never use hot water on a blood stain, as this will only set the stain.*

Candy Stains: Use hot water on all candy stains that do not contain chocolate. If a chocolate stain, first rub out the stain with a clean cloth dampened with Nash Fabric Cleaner. Then scrape with a dull knife and rinse with cold water. In either case, after the spot has dried, it is advisable to finish the job by using Nash Fabric Cleaner.

CAUTION: *Avoid the use of hot water except where specifically recommended.*

Fruit Stains: Rub vigorously with a cloth dampened in hot water, and when dry use Nash Fabric Cleaner.

Ice Cream: Follow the same procedure as for fruit stains.

Lipstick: Pour a small quantity of Nash Fabric Cleaner directly on the spot. Press a clean white blotter over the stain. Repeat this process, using a new blotter each time until no stain remains.

Nausea Stains: Use warm soapsuds. Sponge the stained area until stain is removed. Brush with a whisk broom, with the fiber pile when wet and against the pile when dry.

Milk Stains: Follow the same procedure as for nausea stains.

Water Spots: Sponge the entire panel with a cloth dampened with cold water, and then sponge the spots with Nash Fabric Cleaner.

Chewing Gum: Moisten the gum with Nash Fabric Cleaner. Remove with a dull knife, and then finish with Nash Fabric Cleaner.

Renovating Mohair Upholstery: If the car is trimmed with mohair upholstery, the fabric pile may, after a long period of time, become slightly flattened or "shiny." If this happens, restore the pile in the following manner:

Dampen a clean cloth and spread it over the pressed down portion of the upholstery. Then press a hot iron over the cloth lightly. This will drive the steam into the core of the resilient fibres and cause them to spring erect. Should the pile be crushed down badly, it may be necessary to repeat this several times.

83. CLEANING LEATHER

1949 "600" and "Ambassador 6" Series

The cause of stickiness and loss of luster on leather upholstery is due largely to the use of polishes or cleaning preparations which injure the surface finish. To maintain a bright and clean finish on

leather upholstery, we suggest the following method:

Apply damp (not wet) cloth with Castile soap and rub the surface of the leather briskly. Next, apply a moist cloth without soap. Finish by rubbing dry with a clean soft cloth. The gloss finish of the leather may disappear during the first operation. However, it will be restored by the friction produced by the dry cloth.

Under no circumstances, use furniture polishes, oils or varnishes on leather upholstery.

84. CLEANING RUG MATERIAL

1949 "600" and "Ambassador 6" Series

Rug material occasionally requires cleaning, which may be done with a whisk broom or vacuum cleaner.

NOTE: *In some cases the pile of the rug material is set into a rubber base, and any fabric cleaner or gasoline may serve as a solvent which will cause the pile to be loosened and come out.*

Removing Spots

Use Ivory soap suds with a sponge, wiping off the suds with a dampened sponge. Do not use an excessive amount of water. When dry, brush with a whisk broom.

85. GLASS—CARE AND HANDLING

1949 "600" and "Ambassador 6" Series

Cleaning Glass

Clean windshields and windows promote safety and comfort in driving. However, care in cleaning should be exercised.

Do not clean glass with a chamois or cloth which has been used to wash the car or has collected dirt and fine grit or sand. Such foreign materials will cause fine scratches in the glass, and in some cases may obstruct the vision.

Glass Breakage

Care should also be exercised to prevent glass breakage. Avoid the use of any object which may cause chipping or breakage if it comes in contact with the edge of the glass.

Signs and Labels

Certain adhesive materials used for pasting signs or labels on the glass cannot be removed without causing pits in the glass.

86. CHROME PLATED PARTS

1949 "600" and "Ambassador 6" Series

Chrome plated parts should be wiped occasionally with a cloth dampened with light oil or kerosene. Rust spots or tarnish on chrome can be removed with Nash Chrome Cleaner.

87. STAINLESS STEEL PARTS

1949 "600" and "Ambassador 6" Series

Stainless steel parts, such as body belt and lower moldings, rear window and windshield reveal moldings, should be cleaned with Nash Chrome Cleaner. Under certain conditions of operation, a corrosion may develop on the stainless steel parts that will, if allowed to go without an occasional cleaning, make the parts appear rusted.

88. PAINT—CARE OF FINISH

1949 "600" and "Ambassador 6" Series

Nash-built cars have baked enamel finish on body, hood, fenders, and all sheet metal parts. This finish is exceptionally durable and gives a beautiful high gloss. Under ordinary conditions, the finish will require but little attention to preserve it for a long period.

Washing

To avoid scratching the finish, the car should be washed, rather than cleaned with a dry cloth. Wash the car only when it is out of the rays of the sun, and after the metal surface has been allowed to cool. Use cold water and dry with a clean chamois.

Polishing

While this type of finish will maintain high gloss for a long period, it will be necessary at certain intervals, depending entirely on the climatic conditions to which the car is exposed, to clean the finish in a more thorough manner than is possible by washing. When the surface film, which will naturally accumulate, cannot be removed by washing, the finish should be cleaned with Nash Liquid

Polish and Cleaner. Rub sufficiently to clean the surface thoroughly and follow with a brisk circular motion with a soft dry cloth.

Waxing and Polishing

Where the finish of a car has been neglected and has oxidized through weathering, use Nash Cleaner and Polish. This will remove the road film and restore the finish to a long-lasting, high gloss.

On cars that have been touched up, or have had sections refinished in repair lacquer, it may be necessary to use a paste cleaner on these repaired parts to remove the traffic film. Where paste cleaner is used on lacquered parts, always follow with Nash Liquid Polish to produce a hard dry surface and high luster.

CAUTION: *Do not use paste cleaner or wax on Baked Enamel finished cars.*

Use Nash Liquid Polish and Cleaner.

Rust

The body and other sheet metal parts are protected from the action of rust by a "Bonderizing" process. Where the paint finish is damaged in such a way that bare metal is exposed, the "Bonderizing" prevents the spread of rust to a greater area. It is, however, to the advantage of the car owner to have any such damage properly repaired. For this reason, a special line of paint materials has been developed for repairing damage to this type of finish.

This material is Air Dry Enamel. It is comparable to Bake Type Enamel in producing a high gloss, glass-like finish. Properly maintained with Nash Liquid Polish it produces an appearance more nearly comparable to baked enamel than that produced by any other repair material.

Road Tar or Oil

The use of a good standard brand of tar remover will remove oil or tar without injury to the finish. However, if the tar has hardened, use gasoline, which does not contain coloring matter or Ethyl fluid. After removing the tar, it is advisable to apply Nash Cleaner and Polish.

Salt Air

A little extra attention should be given to cars operated near the seashore. The body and sheet metal should be polished carefully every three months. Chrome plating should also be cleaned at the same time.

89. BODY LUBRICATION CHART

Polish and Cleaner. Rub sufficiently to clean the surface thoroughly and follow with a brisk circular motion with a soft dry cloth.

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Nash

1949 "600" AND "AMBAS

BODY LUBRICAT

DECK COVER KEY LOCK HANDLE

Subject No. 61

Use finely powdered graphite.

DECK COVER LOCK

Subject No. 62

Use motor oil in lock mechanism and Lubriplate on lock bolt.

DECK COVER CONCEALED HINGES

Subject No. 65

Use Lubriplate on spring, pin, and all points of friction. Apply with small brush.

DECK COVER LOCK STRIKER

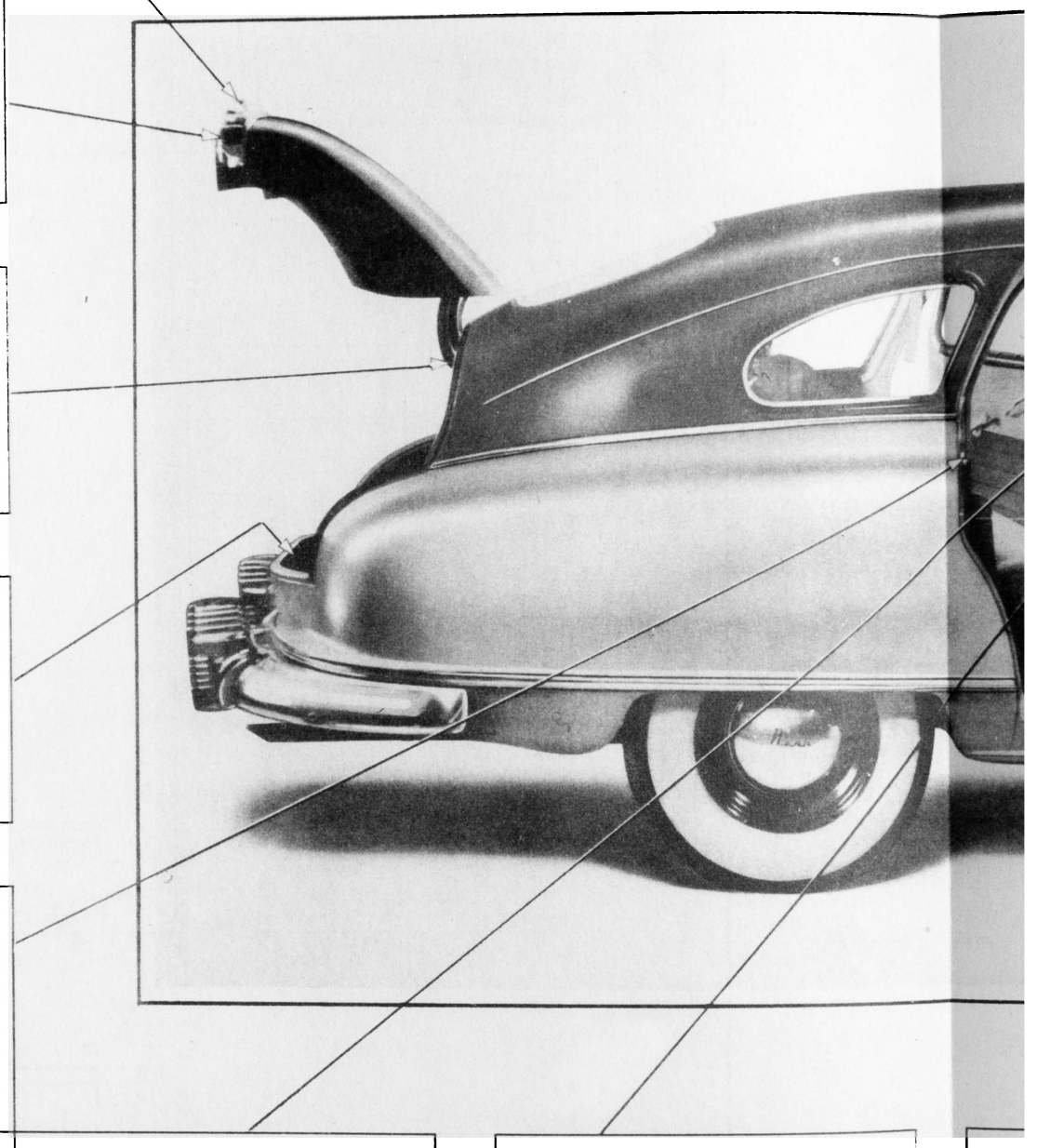
Subject No. 63

Apply thin film of Lubriplate on bottom side of striker.

REAR QUARTER BODY PILLAR LOCK STRIKER AND MALE DOVETAIL

Subject No. 40

Apply thin film of Lubriplate to both sides of lock striker. Do *not* use wax lubricant.



DOOR CHECKS—OR HINGE SPRINGS

Subject No. 35

Apply Lubriplate to contact points of spring to hinge shaft and base.

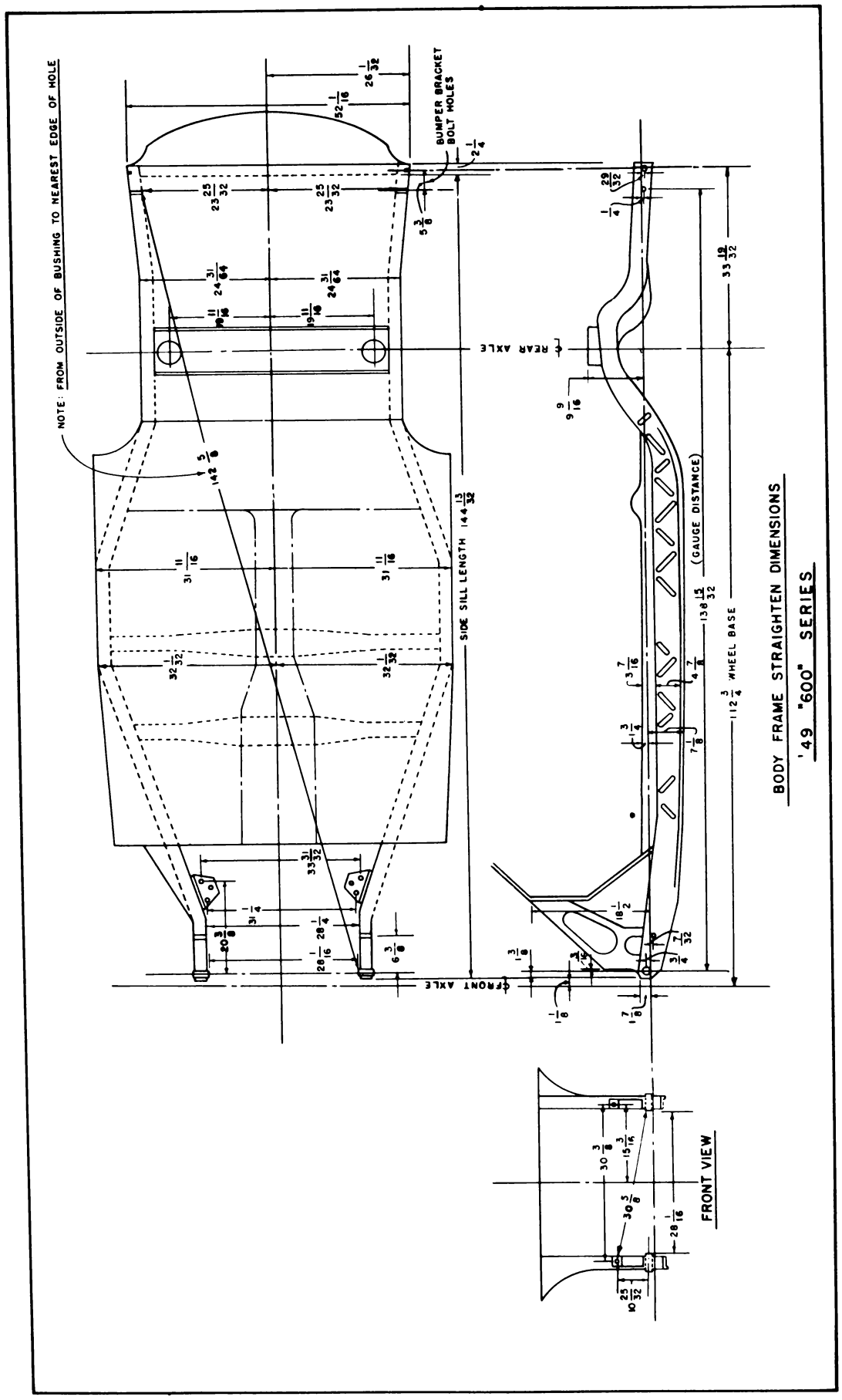
REAR DOOR LOCK AND ROTOR

Subject No. 22—Figure 22-C

Use light oil in 3 holes above rotor for lock mechanism and cams. Use Lubriplate on rotor.

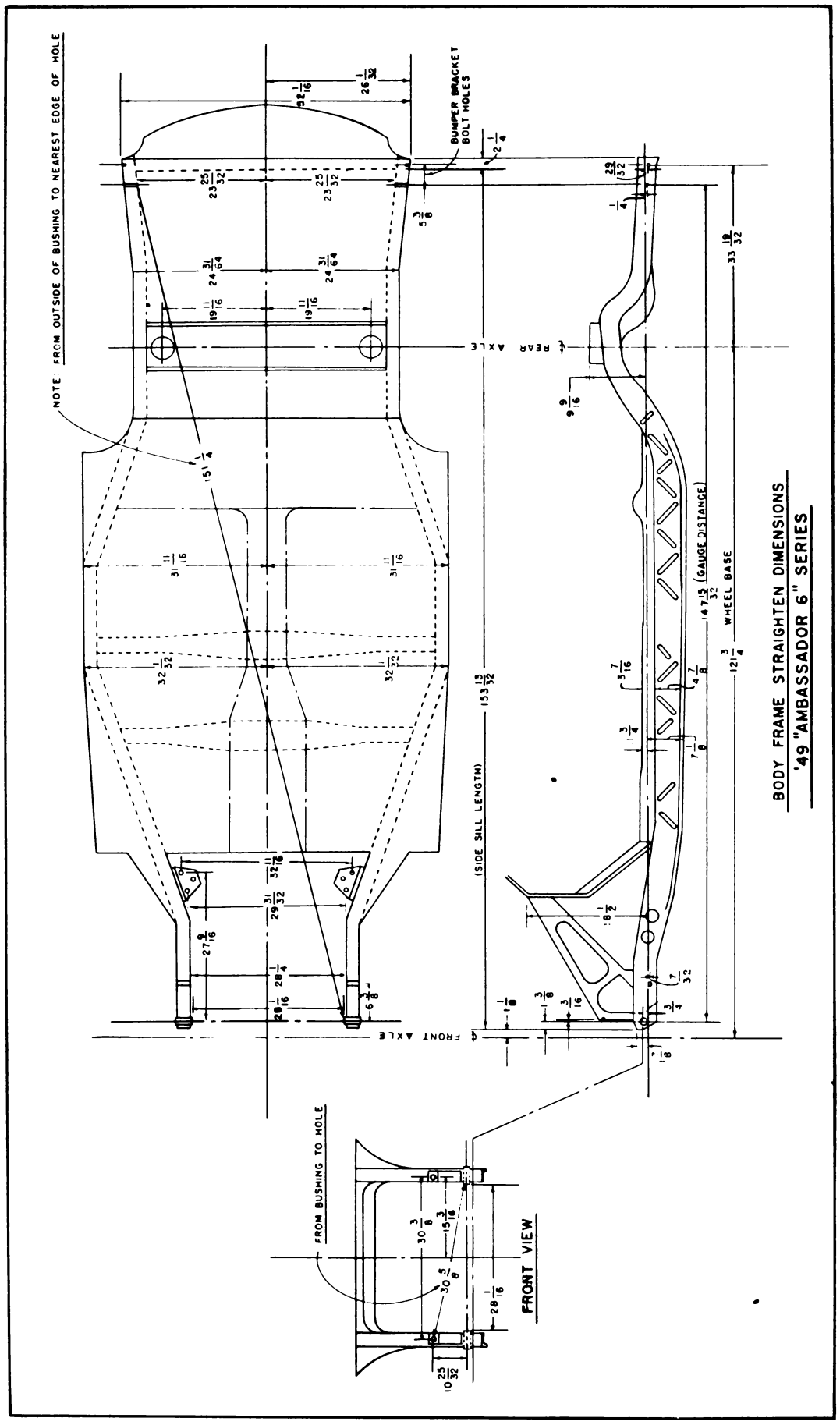
90. BODY DIMENSIONS CHART

1949 "600" Series



91. BODY DIMENSIONS CHART

1949 "Ambassador 6" Series



Frame—Body Dimensions Chart—1949 "Ambassador 6" Series

SUBJECT	NO.
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Arm Rest—Front Door	17
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Body Frame Dimensions Chart 1949 "600" Series	90
Body Frame Dimensions Chart 1949 "Ambassador 6" Series	91
Body Lubrication	89
Body Identification	1
Body Complete or Skeleton	3
Body Panels	4
Bending Doors	41
Car Identification Numbers	1
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Channel—Front Door Glass Side and Header	29
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Cleaning Upholstery	82
Cleaning Leather	83
Cleaning Rug Material	84
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Cover—Rear Deck	5-66
Cover—Glove Box Door Clock Opening	52
Control—Remote	20-21
Cover—Rear Deck Ornament	64
Chart—Lubrication	89
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Chart—Body Frame Dimensions 1949 "Ambassador 6" Series	91
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Door Glove Box	54
Door Handle—Outside	12
Door Hinges	39
Door Hinge Springs	35-36
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Frame—Body Dimensions Chart 1949 "Ambassador 6" Series	91
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Glove Box	50
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Window Regulator—Rear Door,Sedan	28
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LUBRICATION SECTION



Nash

TECHNICAL SERVICE MANUAL

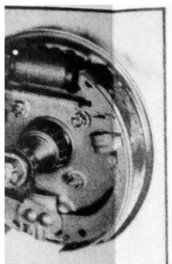
LUBRICATION CHART

Printed in U.S.A.

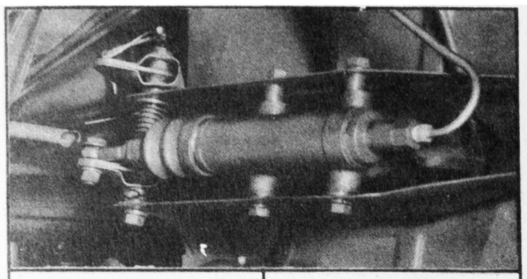
September 1, 1948

)" AND
R 6" SERIES

LUBRICATION

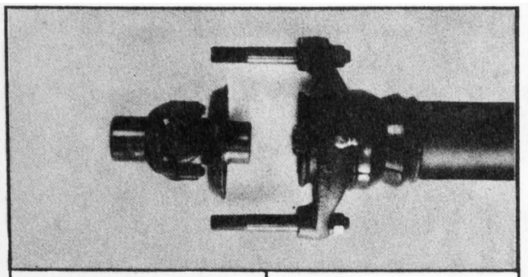


HEEL BEARINGS
REPACK
RING LUBRICANT
10,000 MILES



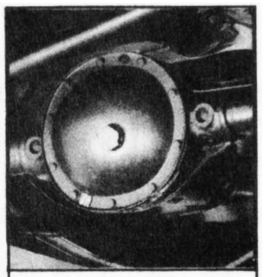
PEDAL SHAFT
1 OILER
CHASSIS LUBRICANT
1,000 MILES

MASTER CYLINDER
FILLER UNDER FLOOR
LOCKHEED NO. 21
BRAKE FLUID
CHECK 1,000 MILES

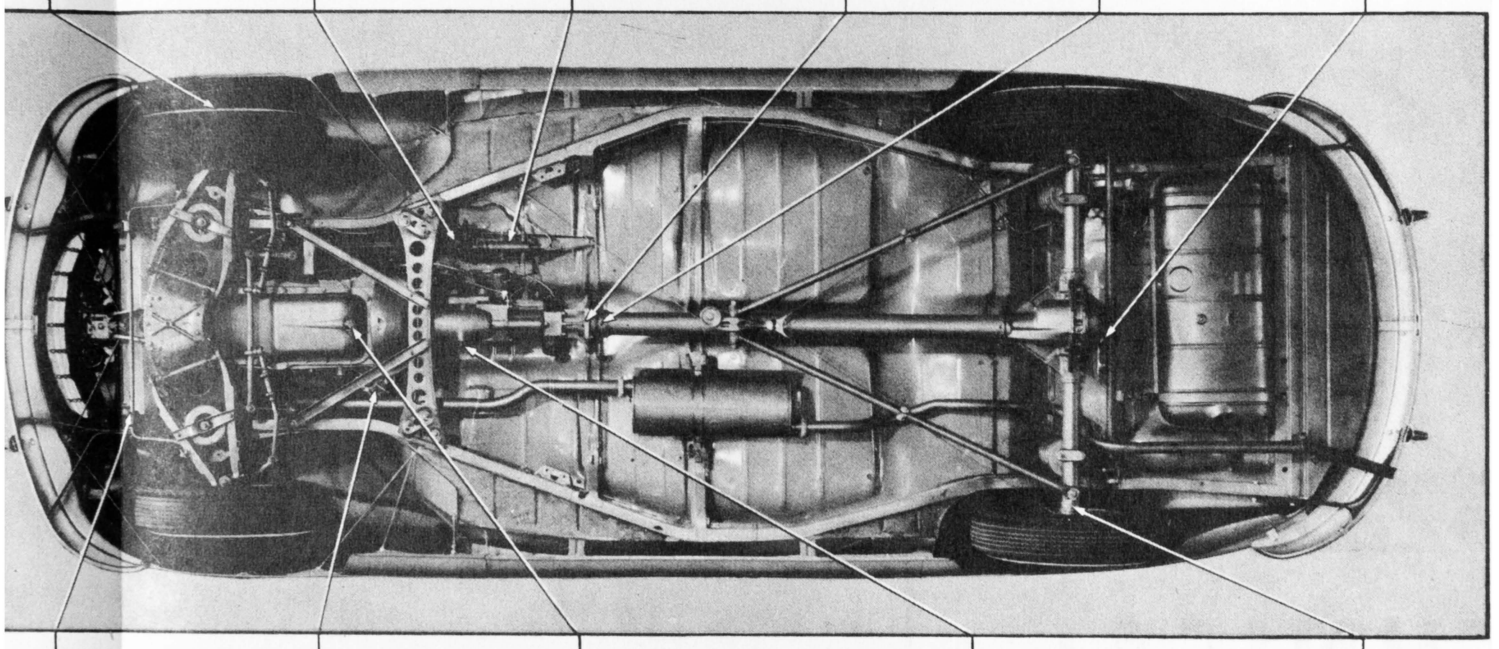


UNIVERSAL JOINTS
INSPECT REPACK
CHASSIS LUBRICANT
15,000 MILES

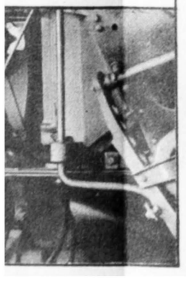
PROPELLER TUBE TRUNNION
"600" SERIES—1 OILER
CHASSIS LUBRICANT
5,000 MILES



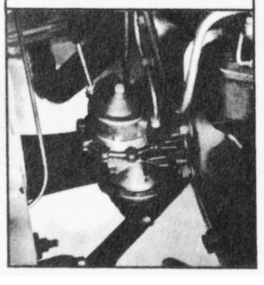
REAR AXLE DRIVE GEARS
SEE NOTE
CHECK 1,000 MILES



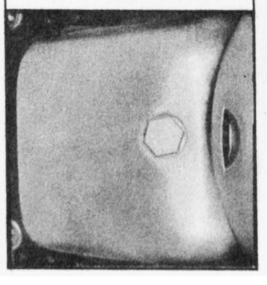
ADIATOR DRAIN
IN WATER LEVEL AND
NSION SPACE. ADD
OR. DRAIN AND FLUSH
ADDING ANTI-FREEZE.



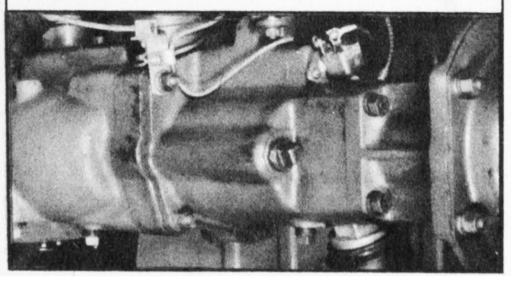
5,000 MILES
FUEL PUMP
CLEAN SCREEN
TO ELIMINATE SEDIMENT



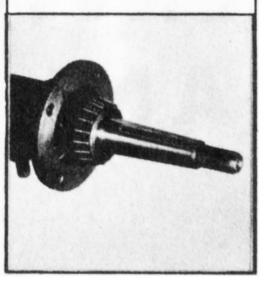
2,000 MILES
ENGINE OIL PAN
DRAIN AND REFILL



CHECK 1,000 MILES—SEE NOTE
TRANSMISSION AND OVERDRIVE
DRAIN AND REFILL 10,000 MILES



15,000 MILES
AXLE SHAFT BEARINGS
REPACK
WHEEL BEARING LUBRICANT



MAINTENANCE DATA

MISCELLANEOUS LUBRICATION

FRING GEAR	SAE 140 STEERING GEAR OIL
ATER PUMP	WATER PUMP LUBRICANT
AKE CONTROLS	USE OIL CAN

DISTRIBUTOR LUBRICATION

WIPE BREAKER CAM WITH PETROLEUM JELLY 1,000 MILES
ONE DROP OF LIGHT ENGINE OIL ON BREAKER PIVOT AND BREAKER PLATE BALLS AND WICK 5,000 MILES

COOLING SYSTEM

"600" SERIES ..... 14 QTS (11-2 3 B.I.)
AMBASSADOR 6" SERIES ..... 17 QTS (14 B.I.)
PRESSURE CAP 4 LBS PRESSURE
MAINTAIN EXPANSION SPACE

TIRES

"600" SERIES	24 LBS
"AMBASSADOR 6" SERIES	24 LBS


Nash
SERVICE